The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 666.—Vol. XVIII. LONDON, SATURDAY, MAY 27, 1848. [Price 6d.

Stannaries of Cornwall—In the Vice-Warden's Court.

PURSUANT to a DECREE of the Vice-Warden's Court, in the consolidated causes of JULIAN *v.* JULIAN, RICHARDS *v.* SAME, VARCOE *v.* SAME, VARCOE *v.* SAME, MOYLE *v.* SAME,

the CREDITORS, in respect of VICTORIA TIN MINE, in the parish of ST. STEPHENS-IN-BRANWELL, within the said Stannaries, are, on or before the 31st day of May inst., to come in and PROVE their DEBTS before the REGISTRAR of the said court, at his office, in Truro, or, in default, they will be excluded the said decree.

Dated Registrar's Office, Truro, May 18, 1848.

Stannaries of Cornwall—In the Vice-Warden's Court.

PURSUANT to a DECREE of the Vice-Warden's Court, made in the cause of STEPHENS and OTHERS *v.* HARVEY, the creditors in respect of ALBERT ADVENTURE MINE, in the parish of GWINEAR, within the said Stannaries, are, on or before the 8th day of June next, to come in and prove their debts before the Registrar of the said Court, at his office in Truro; or, in default therof, they will be excluded the said decree.

Dated Registrar's Office, Truro, 25th May, 1848.

VALUABLE FREEHOLD ESTATE.—WAINGROVE'S

HALL, DERBYSHIRE, will BE OFFERED FOR PUBLIC COMPETITION, by Mr. BREAREY, on Wednesday, the 31st day of May inst., at the ROYAL HOTEL, in DERBY, at Five o'clock in the afternoon (subject to such conditions as will be there exhibited), all that MODERN MANSION, known as WAINGROVE'S HALL, with requisite OFFICES, COACH-HOUSE, STABLING for 10 horses, BARN, and other BUILDINGS and CONVENIENCES, COTTAGES for labourers, GARDENS, ORCHARDS, PLEASURE GROUNDS, and FISH-PONDS—suitable for the residence of a gentleman's family; together with the under-mentioned PARCELS of excellent enclosed arable, meadow, and pasture LAND and PLANTATIONS, adjoining and contiguous to the said mansion-house, situated in the several parishes of PENTRICH and HEANOR, in the COUNTY OF DERBY—viz.:

No. on Plan.		Cultivation.	A.	R.	P.
1	Great Wood Close	Arable	7	1	33
2	Plantation	—	0	3	1
3	Little Wood Close	Arable	1	3	23
4	Plantation	—	0	1	11
5	Far Court Close	Arable	3	1	15
6	Plantation	—	3	0	12
7	The Pasture	Pasture	13	2	37
8	Limekiln Close	ditto	6	0	3
9	Round Meadow	Arable	11	0	34
10	Plantation	—	0	0	22
11	Ditto	—	0	2	37
12	Ditto	—	1	0	15
13	Over Willow Close	Arable	3	0	2
14	Plantation	—	0	0	22
15	Nether Willow Close	Arable	2	0	29
16	Joshua's Meadow	ditto	4	3	25
17	Bracken Close	Pasture	11	3	21
18	Barn Croft	ditto	3	0	17
19	The Hall, Outbuildings, Garden, Orchards, Pleasure Grounds, Lawn, and Entrance Road	—	23	2	34
20	The Wilderness	—	0	2	33
21	Broom Close	Arable	2	1	26
22	Common Piece	ditto	0	3	33
	Total		102	3	10

The house is situated on a gentle acclivity, nearly in the centre of the estate, in the immediate neighbourhood of the Dommington Hunt, within 9 miles of Derby, 13 from Nottingham, and 5 from Alfreton; Ambergate and South Wingfield Stations, on the Midland Railway, and Codner Park, on the Erewash Railway, are at easy distances.

The estate lies in a ring fence—is about equally in the parishes of Pentrich and Heanor—that in the latter parish being tithe free.

The land is of excellent quality, well timbered with oak, ash, larch, &c., of mature growth; and, together with the fish-ponds, pleasure grounds, and plantations, give a park-like appearance, and well-watered by never-failing springs.

The whole estate abounds with several beds of hard and soft coal, of the quality of the far-famed old Denby and Kilbourne Fields, as also with superior ironstone, valuable stone for building purposes, and excellent brick-clay, the situation and qualities whereof will always command a market.

A bill is now before Parliament (read a second time) to obtain an Act for making a branch from the Midland Railway to Ripley, and provision is therein made to construct a branch on a self-acting plane, about 12 chains in length, purposely to connect the estate therewith.

*** A person resident at the house is appointed to show the estate; and further particulars and information may be obtained at the offices of Messrs. J. W. Bromley and Aldridge, solicitors, 1, South-square, Gray's Inn, London; of the auctioneer, in Derby; or of Messrs. Rickards and Son, solicitors, Alfreton, Derbyshire, where maps and surveys of the estate are deposited for inspection.—Alfreton, May 1, 1848.

VALUABLE SEA-SALE COLLIERIES TO BE LET.—

TO BE LET, and entered upon on the 1st of July next, the valuable current-working COLLIERIES of EVENWOOD and NORWOOD, in the county of Durham.

These collieries are situated upon the line of the Stockton and Darlington Railway, by which the coals are conveyed to the shipping ports of Stockton and Middlesborough; and also, by means of this, and the York and Newcastle, and Leeds and Thirsk Railways, the coals have access to the important land-sale trade of Northallerton, Thirsk, Ripon, York, the lead-mining districts, and other towns in Yorkshire, and for shipment on the Ouse; and, by means of the proposed Northern Counties Union Railway, with the important land-sale trade of the western parts of Yorkshire and Westmoreland.

The royalties are very extensive. Two seams of coal are in working—one upwards of 6 feet, and the other of 3 feet. The pits are at a moderate depth from the surface, and the coal is worked at an exceedingly cheap rate, and is much prized as a household coal, both for export and land-sale.

The entering tenant has the option of taking what stock he may require, at a valuation; and the amount of capital required to enter upon the collieries will be of very small amount.

For particulars apply to Thomas Wheldon, Esq., Barnard Castle; or to Nicholas Wood, Esq., Newcastle-upon-Tyne.—Newcastle, March 3, 1848.

TO BE SOLD, the LEASE AND PLANT OF IRONSTONE

AND COAL MINES, in the most productive part of the STAFFORDSHIRE FIELD.—The blast-furnaces, mills, and forges, are making iron of the first quality. Every economy and convenience is presented towards profitable working. Most satisfactory reasons given for the retirement of the present proprietor. For capitalists to embark in iron manufacture, it offers the most important advantages.—Apply to Messrs. Gladstone and Co., surveyors and estate agents, 115, New Bond-street.

TO BE SOLD, OR LET, a valuable COAL MINE, in the

township of GREAT HARWOOD, in the county of Lancaster. The mine has been recently proved, and found to be 3 feet 2 inches in thickness, and of excellent quality; it is commonly called, or known, by the name of the UPPER MOUNTAIN MINE, and extends over about 1000 statute acres, which will be divided into suitable lots.

The property is situated between the towns of Blackburn and Clitheroe, and is intersected by a branch of the East Lancashire Railway.

A section of the borings may be seen, by applying to Mr. Boosie, Rufford-hall, Ormskirk; or to Mr. Whittle, coal viewer, Charnock Richard, Chorley—to either of whom proposals may be sent.

IMPORTANT TO CAPITALISTS.—TO BE SOLD, an

excellent SLATE and SLAB QUARRY—VARIEGATED MARBLE and HONE QUARRY—COPPER and LEAD MINES—all situated on the same property, within a short distance of the shipping harbour of Portmadoc, Carnarvonshire.

A GENERAL STATEMENT.

The above works are situated on a farm called Croesawr-uchaf, in the parish of Llanfrothen, in the county of Merioneth, about seven miles distant from the shipping harbour of Portmadoc, and about two and a half from the railway of the Festiniog Slate Quarries to the port. They are near the celebrated quarries of Festiniog, which are well known throughout Europe; and it hath been ascertained, by competent judges, that this slate vein is a continuation of the very productive vein worked by the Welsh Slate Company at that place, of which Lord Palmerston and other noblemen are partners, which send about 500 tons per week of fine slate to the market. The vein is about 70 yards wide, and very advantageous for working, being situated on the brow of a hill, and the rubbish thrown down, where there is a depository of 200 or 300 yards deep for it, without causing any trespass. The quality is good, splits well, and is of a beautiful blue colour.—Slates of the largest size are made from it, and slabs also, of large dimensions. Thousands of fine slates, worked to sizes, and beautiful slabs, are now ready on the bank.

The proprietor has ascertained most positively that no other slate quarries in Wales can produce such beautiful specimens from so near the surface, and where so little money has been expended.

The MARBLE and HONE adjoins the slate quarry, and some splendid specimens of variegated marble and hone have been already made from it.

The COPPER and LEAD MINES are about a quarter of a mile from the slate quarry, and the metals are of superior quality, and likely to become very productive.

There is the greatest facility for carrying on operations at all the works, which may be done with little expense, as few or no machinery will be required. A sawing and planing engine may be worked by water, just below the quarry.

Satisfactory reasons will be given why it is sold.

For further particulars, and to treat for the same, apply (postage paid) to Mr. Richard Jones, printer and auctioneer, Dolgelly, North Wales, where specimens of the slates, marble, hone, copper, and lead, may be seen.

LEAD AND SILVER MINES, IN THE COUNTIES OF

NORTHUMBERLAND AND DURHAM.—TO BE SOLD, BY PRIVATE CONTRACT, all those valuable and current-going LEAD and SILVER MINES, belonging to the Bulbeck Lead Company, called SILVER TONGUE, in the county of Northumberland, and Hysop, in the county of Durham, with the ENGINES, for pumping and for washing the ores, OFFICES, COTTAGES, MINE SHOPS, MATERIALS, and UTENSILS belonging to the same, situated upon the River Derwent, in the immediate vicinity of Shotley-bridge, about 16 miles from Newcastle-upon-Tyne, and near the Wear Valley Railway.—Those mines are divided from each other by the River Derwent, which here forms the boundary between the counties of Northumberland and Durham, but are connected by levels of communication for the convenience of unwatering the workings, and of washing the produce at central washing floors.

The Silver Tongue Mines are held by lease from the lord of the manor of Bulbeck, and the Hysop Mines from the Dean and Chapter of Durham. The royalty dues payable for the former are highly favourable, and for the latter are moderate. The leases are renewable according to custom. The engines for unwatering the mines, and for crushing and washing the ores, are driven by water, and in the best order and efficiency. The right of working extends over a tract of mining ground, through which many veins of lead are known to run. Four only have been partially worked, and yield large quantities of ore, rich in silver, and are converging towards a point of intersection with other veins, where a considerable accumulation of ore is expected. From the known productiveness of the lower strata in the very ancient Derwent Lead Mines, there can be no doubt but they will here be equally productive.

The Castle Side Smelting Mill, with machinery, horizontal chimneys, and every convenience for smelting and refining the ores from this and other mines, is situated in the immediate vicinity.

Mr. William Watson, the agent on the premises, will show the mines, and further particulars may be known and plans seen, by applying to Mr. John Dolphin, mine surveyor, Hunter House, Riding Mill, Gateshead-on-Tyne, and who is also authorised to treat for the same.

HEALY FIELD LEAD AND SILVER MINES, in the

parish of LANCHESTER, in the county of Durham.—FOR SALE, by PRIVATE CONTRACT, the above-mentioned MINES, together with all the MACHINERY and MATERIALS thereon.—These mines, which are held by lease from the Dean and Chapter of Durham, are now, and have been for many years past, in full course of working, and the produce has been considerable. The ore yielding a high per centage of lead, and from 20 to 25 ounces of silver to the ton. The mines are well stocked with water-wheels, and all machinery necessary for extensive operations, and the prospects for deeper and more extended trials are most encouraging.

The agent on the mines, Mr. Wm. Forster, is instructed to render every facility and information to parties visiting the mines; and for further information apply to Mr. Eddy, of Grassington, near Skipton, in the West Riding of Yorkshire, who is authorised to treat for the same, and by whom satisfactory reasons will be given for the retirement of the present proprietors.—Dated May 18, 1848.

TO BE SOLD, BY PRIVATE CONTRACT, all that well-

known LEAD MINE, situate in the parish of CLYNNOG, in the county of Carnarvon.—A shaft, of 13 yards, has been sunk there, and the lead was then immediately discovered, after which the proprietors caused a level to be driven of from 29 to 30 yards, under the place where the lead was first found, which will effectually prevent water interfering with the work, and have got now to within 10 yards of the principal vein.

Its contiguity to the sea (the work being only half a mile from the same), makes the carriage to the place of exportation a mere trifle. A great deal might be said in an advertisement, by way of endeavouring to enhance the value of the mine, but the proprietors are only anxious that any person or persons, who may feel desirous of purchasing, will take a view of the premises for his or their satisfaction. Specimens of the lead have been analysed by the most experienced persons; it runs the standard, and will produce 5 ozs. of silver in each ton. The proprietors will have no objection to continue to hold 4-16ths, if required.

Particulars (by letters, or otherwise) may be had on applying to Mr. Robert Jones, Tyn'rallt, near Carnarvon.—May 22, 1848.

TO BE LET, for a term of years, several large VEINS, or

LODES, of BLACK HEMATITE IRON ORE, now open, and in work. The richness of the ore is equal, if not superior, to any in the kingdom. Distant from the sea-port 6 or 7 miles; and, from that place, water carriage (16 miles) to the several iron-works in Glamorganshire and Monmouthshire. Furnaces and machinery, by water-power, are close adjoining to the mine.—Further particulars to be had, by letter, addressed to Mr. J. Woolcott, Sandhill Park, Taunton.

DOROTHEA SLATE QUARRY—TO BE LET, for the

remainder of the term of the lease.—It is in full work, yielding slate of the first quality, and will produce 500 tons a-month. It is situated 9 miles from Carnarvon, on the line of the Nantile Railway.—Apply to Mr. Thomas Turner, Carnarvon.—April 15.

TO BE SOLD, BY PRIVATE CONTRACT, TWO

FORCING LIFTS OF PUMPS—the pipes 9-inch diameter, with plunger-poles, cases, stuffing-boxes, H-pieces, and clack-pieces: one drawing lift, the pipes 9-inch diameter, with working-barrel, clack-pieces, and windbore. The whole length of these pumps is about 200 yards, with pins and rings to joint them; also, a QUANTITY of WROUGHT-IRON JOINT PLATES and PINS, for main and small rods, with buckets, clacks, &c., complete.

The above lies upon a line of railway adjacent to Liverpool, and convenient to be forwarded to any part of the kingdom, and will be sold upon moderate terms.

For further particulars apply to William Rowe, Esq., Mount-street House, Wrexham.

STEAM-ENGINE FOR SALE.—FOR SALE, an excellent

STEAM-ENGINE, of 35-in. cylinder, suitable for mines, collieries, water-works, iron-works, &c.

The above-named engine is at TRENOW CONSOLS, near MARAZION, CORNWALL, and is 10-ft. stroke, equal beam, of the best construction, and in perfect working condition, having been used for a comparatively short period.

Application to be made to Mr. Henry Thomas, Mining Office, 8, George-yard, Lombard-street, London; or Mr. Francis Pryor, Bell Cottage, Gwennap.—Dated May 25, 1848.

TREWALLACK MINE.—TO BE SOLD, BY PRIVATE

CONTRACT, an excellent ENGINE, for pumping or drawing, about 20-inch cylinder, in good condition, with a boiler of 10 tons.—For particulars, application to be made to Capt. John Lean, Camborne; or to Mr. H. Ellery, Truro.

N.B.—There are also several tons of pitwork—viz.: 18 pumps, 13-inch; 2 working-barrels, 13-inch, nearly new, 2 doorpieces, and 2 windbores.

TO BE SOLD, BY PRIVATE CONTRACT, a THREE-

CYLINDER CONDENSING-ENGINE, 16-horse power; also, an 8-horse HIGH-PRESSURE THREE CYLINDER ENGINE, working upon three-throw triangular cranks—thereby affording a steady and uniform motion, which renders them particularly applicable and well adapted for grist mills, clothing mills, or any machinery requiring a steady and even movement.—Address to Edmund Budge, engineer, church-street, Tewkesbury, Gloucestershire.

FOR SALE, BY PRIVATE CONTRACT—A single-acting

PUMPING-ENGINE—cylinder 30-inch diameter, 9-feet stroke, equal beam, with 7-ton boiler, cisterns, spring beam, and first set of rod-shafts attached, being the engine of Wheal St. Cleer.—For particulars, apply to Capt. Osborne, Liskeard; Mr. West, engineer, St. Blazey; or Mr. Rendle, the parser, 13, Octagon, Plymouth.

STEAM-ENGINES.—From 8 to 20-horse power ENGINES

ALWAYS IN STOCK.

Apply to Mr. CAPPER, Engine-Maker and Founder, BIRMINGHAM.

Price—£12 to £16; with boiler, £22 per horse.

FOURDRINIER'S PATENT SAFETY APPARATUS, for

PREVENTING ACCIDENTS IN MINES AND OTHER PLACES, WHEN THE ROPE OR CHAIN BREAKS.

By the ADOPTION of this INVENTION the LIVES of the WORKING MINERS may be PRESERVED, and the PROPERTY of the MINE OWNERS PROTECTED from the serious consequences of either of the following accidents—viz.:

1. From the men, or the load, being precipitated to the bottom of the shaft when the rope or chain breaks: in this case the apparatus is *self-acting*.

2. From either the men, or load, being drawn over the pulley: in this case, also, the apparatus is *self-acting*.

3. From the fearful consequences to men or load of a "whirl," or run: in this case the result is equally *certain*.

A COAL PIT, with the SAFETY APPARATUS ATTACHED to the CAGE, is daily at WORK near BURSLEM, in the STAFFORDSHIRE POTTERIES.

To inspect the apparatus, or to obtain any further information, application may be made to Mr. Edward N. Fourdrinier (the patentee), Cheddleton, near Leek, Staffordshire; or to Mr. Joseph Fourdrinier, 68, Arlington-street, Camden Town, London—who are prepared to GRANT LICENSES for the USE of the PATENT.

PATENT FLEXIBLE INDIA-RUBBER PIPES AND

TUBING, for Railway Companies, Brewers, Distillers, Fire-Engines, Gas Companies, Gardening and Agricultural purposes, &c.

THE PATENT VULCANISED INDIA-RUBBER HOSE-PIPES

are made to stand *hot liquor* and *acids*, without injury—do not become *hard* or *stiff* in any temperature (but are always perfectly flexible); and as they require NO APPLICATION of oil or dressing, are particularly well adapted for *Fire Engines, Pumps, Gas, Beer-Engines, Gardens*, and all purposes where a *perfectly Flexible Pipe* is required.

Made all sizes, from ¼-inch bore upwards, and of any length to order.

Vulcanised India Rubber Garden Hose, fitted with brass-taps, Copper branch and Rose's complete, ready to be attached to pumps, water-butts, or cisterns.

Sole manufacture, JAMES LYNE HANCOCK,

Goswell Mews, Goswell-road, London.

N.B.—Vulcanised India-Rubber Washers, of all sizes, for joints of hot-water and steam-pipes, and *Vulcanised Sheet Rubber*, any thickness, for all kinds of joints, and other purposes.

TREVIL RAILROAD SHARES.—TO BE SOLD, BY

AUCTION, by Mr. JOHN WILLIAMS, on Tuesday, the 6th day of June, 1848, at the ANGEL HOTEL, ABERGAVENNY, at Four o'clock in the afternoon precisely (by order of the executor of the late Mrs. Elizabeth Horton), FOUR SHARES in the TREVIL RAILROAD COMPANY, in lots of one share each.

This company has been long established—is in good working condition, and has been paying an excellent dividend for many years; which circumstances will render the purchase of these shares a very desirable investment.

For particulars apply to Mr. J. W. Sloper, solicitor, 6, Vernon-place, Bloomsbury-square, London; or of Mr. John Williams, auctioneer, Abergavenny.

EMIGRATION.—PERSONS EMIGRATING may obtain a

FREE GIFT of FORTY ACRES, and upwards, of the BEST LAND, in the most healthy and productive portion of the UNITED STATES. Also, LAND FOR SALE, from $1 per acre. Passengers shipped to all parts of the world, and supplied with bonded stores, provisions, &c., on the lowest terms.

Apply (if by letter, post-paid) to the General Passenger Shipping and Land Agency Offices, 15, Eastcheap, London, and 32, Waterloo-road, Liverpool.

TO MINING COMPANIES, SMELTERS, &c.—The

ADVERTISERS, two young men, of considerable experience in smelting operations, are desirous of obtaining EMPLOYMENT, having no objections to go to any part of the world. They have been brought up, under the instruction of their father, as furnace builders, and have a thorough knowledge of every description of furnace, from calcining to refining. Being thoroughly versed in all the processes of smelting, they trust they should be found an acquisition, particularly to a foreign mining company.

Address "A. B.," *Mining Journal* Office, 26, Fleet-street, London.

WANTED, a SALESMAN, for PIG-IRON and CASTINGS,

produced by a set of blast-furnaces and foundry. It is important that the party should have been already in the habit of selling such articles on his own account, or as agent; and that he be well acquainted with the several sorts of articles to be sold, and the markets for them. His whole time must be devoted to the employment.—A line, addressed to "Y. Z.," at Brown and Parnell's, stationers, 17, Old Broad-street, London, will meet due attention.

MINING OFFICES—Established Five Years.—

THOMAS P. THOMAS begs to inform his friends and the public, that he has REMOVED from No. 18, Threadneedle-street, to No. 3, GEORGE-YARD, LOMBARD-STREET, LONDON (late Messrs. Phillips and Tiplady's).

N.B.—Dealer in English and Foreign Funds, Mining, Railway, Gas, and other shares.

MR. R. TREDINNICK, THREE KING'S COURT,

LOMBARD-STREET, LONDON,

Continues to DEAL in every description of MINING, RAILWAY, BANKING, INSURANCE, CANAL, and OTHER SHARES.—Statistical information afforded gratuitously, upon personal application.—MONEY ADVANCED upon the above securities.

JAMES LANE, MINING SHARE DEALER,

75, *OLD BROAD-STREET, LONDON.*

WILLIAM W. TAYLOR & CO., MINERAL SURVEYORS,

MINING SHAREBROKERS, &c.,

No. 2, ROYAL EXCHANGE-BUILDINGS, LONDON.

WILSON & FRASER, 2, WELLINGTON-BUILDINGS,

LIVERPOOL, and 13, EXCHANGE-PLACE, GLASGOW, have always ON SALE PIG-IRON, BAR-IRON, RAILWAY CHAIRS, and RAILWAY BARS.

REUBEN FARLEY, MINE AGENT, AND LAND AND

MINE SURVEYOR,

WEST BROMWICH, NEAR BIRMINGHAM.

MONEY.—MESSRS. KILLICK & CO. (late Winstanley,

Killick, & Co.), SHAREBROKERS, inform their friends and the public, they make IMMEDIATE ADVANCES, to any amount, on the deposit of English and Foreign Railway Shares, Scrip, and Debentures, upon exceedingly advantageous terms: they also BUY and SELL every description of STOCK and MINING SHARES, at much less commission than usually charged.

6, Bank Chambers, opposite the Bank of England.

CAMBORNE CONSOLS MINING COMPANY,

OFFICES REMOVED TO 29, POULTRY, LONDON.—May 11, 1848.

CORNISH MINING COMPANY.—OFFICES, No. 15,

MONUMENT CHAMBERS, LONDON.

ANGLO-MEXICAN MINT OFFICE, 5, Broad-street-build-

ings, London, May 26, 1848.—Notice is hereby given, that the HALF-YEARLY DIVIDEND, declared at the annual general meeting of shareholders, held on the 2d inst., will be PAYABLE on and after the 2d of June next.—Claims to be made, and certificates presented, three clear days previous to payment.

Printed forms of claim are to be obtained at the office.

Hours of attendance Eleven to Three. G. B. LONSDALE, Secretary.

ASTURIAN MINING COMPANY.—The board of directors

hereby give Notice, that they have made a further CALL of ONE POUND per share upon the shares held in the capital stock of the company, and that such call is PAYABLE at the London and County Banking Company, Lombard-street, as follows—viz.: 10s. payable on or before the 1st day of July next; and 10s. payable on or before the 1st day of August next. By order of the board,

Offices of the Company, 9, Austinfriars, May 19, 1848. K. MACKENZIE, Sec.

BANWEN IRON COMPANY—Established 1846—for

WORKING the IRON MINES on the BANWEN ESTATE, in the neighbourhood of SWANSEA, Glamorganshire. The mines are now in work, and further CAPITAL being REQUIRED for erecting additional FURNACES, a portion of the reserved shares of £6 each may now be had, on application at the offices of the company. A deposit of £2 per share to be paid down, and the remainder by two instalments, at intervals of two months. This company offers peculiar advantages, and the profits are estimated to return a dividend of 25 per cent.

S. P. HARRIS, Secretary.

Offices, 23, Threadneedle-street.

NEW GRANADA MINING COMPANY, 13, Austinfriars,

London, May 20, 1848.—A SPECIAL GENERAL MEETING of the shareholders of this company will be HELD at the company's office, 13, Austinfriars, on Friday, the 2d of June, at Two o'clock precisely, for the purpose of authorising the directors to dispose of the property of the company, and to dissolve the company.

By order of the board of directors, L. R. JONES, Secretary.

ST. JOHN DEL REY MINING COMPANY.—The

EIGHTEENTH ANNUAL GENERAL MEETING of the proprietors of the ST. JOHN DEL REY MINING COMPANY will be HELD at the London Tavern, Bishopsgate-street, on Friday, the 9th June next, at Two o'clock precisely. At this meeting one director—viz., Robt. Addison, Esq.—will go out by rotation, but is eligible to be re-elected.

8, Tokenhouse-yard, May 26, 1848. (Signed) W. ROUTH, Secretary.

WEST WHEAL JEWEL MINING ASSOCIATION.—

Notice is hereby given, that a CALL of TEN SHILLINGS per share has this day been made, in conformity with the Deed of Settlement, PAYABLE by TWO INSTALMENTS, of FIVE SHILLINGS each—namely, on the 15th June and 15th October respectively—into the banking-house of Messrs. Praeds and Co., Fleet-street, to the credit of the association; with Messrs. Tweedy and Co., Redruth; into the bank of the said firm, at Redruth; or at the office of the association, as under.

By order of the board, WM. NICHOLSON, Secretary.

57, Old Broad-street, May 8, 1848.

COOMBE TIN MINE.—At a Special General Meeting of the

shareholders, held on the 9th of May, 1848, in pursuance of notice, at the George the Fourth Assembly Rooms, Woolwich, it was unanimously resolved to abandon the working of the above mine, and that the materials, tools, &c., belonging to the said company, be valued, and sold by private contract, that the affairs of the mine may be finally adjusted.—All PARTIES having any CLAIM on the COOMBE TIN MINE, are requested to make it on or before the 8th of June, 1848.—By order of the managing committee.

Office, 7, Powis-street, Woolwich. R. C. MANUEL, Secretary.

It was also resolved,—That a new company be formed under the new grant, and that the mine shall be called the "Runnaford Coombe Mine," allowing each shareholder in the former mine the option of holding the same number of shares in the new, by conforming to the rules laid down, of which notice has been given.

ASSAYING AND ANALYSIS.—Mr. MITCHELL begs to

inform the MANAGERS, &c., of MINES, SMELTING-WORKS, and MANUFACTORIES, that he still continues to CONDUCT ASSAYS and ANALYSES of all PRODUCTS, metallurgical and manufacturing, at his LABORATORY,

23, *HAWLEY-ROAD, KENTISH TOWN, LONDON,*

to which address communications are to be forwarded.—Instruction in all branches of assaying and analysis as usual.

ADCOCK'S PATENT SPRAY PUMP.—This important

INVENTION having been PERFECTED, and brought into SUCCESSFUL PRACTICAL OPERATION, the PATENTEE is ready to RECEIVE, and to execute, ORDERS.—Apply to Henry Adcock, C.E., at his offices, No. 4, Moorgate-street, London, where pamphlets, descriptive of the invention, may be had; at the office of the *Mining Journal*, 26, Fleet-street; and through any respectable bookseller—price 6d.

THE LATE FATAL ACCIDENT BY EXPLOSION.

The adjourned inquest as to the cause of death of the late Mr. Dakin, was held at the London Coffee-house, on Tuesday, the 24th inst.

Mr. Farey presented himself, with the view of correcting certain points of evidence given by him on the occasion of his being examined on a preceding day.—He was not aware that, with water at a temperature of 500°, any experiment had been made, whereby evidence could be afforded as to the pressure; but that, at 438°, such would be 353 lbs. to the square inch; that is to say, within the vessel or cylinder, from which should be deducted, as regards the outer surface, the atmospheric pressure of 15 lbs.—thus making it 338 lbs., being the force required to burst the vessel. As a matter of calculation, he considered that, with 500° of temperature, the pressure would be equal to 632 lbs.; and would render this more apparent to the jury, by supposing a hole, one inch square, made in a vessel, and a piece of metal laid thereon; in such case it would require a pressure, or force, of 632 lbs. to prevent the water oozing out. He considered that there must have been more than 500° of heat—such being the height of the thermometer in the cylinder. With respect to the difference of the expansion of cast and wrought-iron, he wished to correct his evidence given previously, so far as to state that, on subsequent investigation, he found there was but little difference existing. With a heat of 500°, cast-iron might burst, but not wrought-iron. With respect to gun metal, that was a different matter, and had no reference to the point.

This witness was cross-examined by Mr. Edwin James (barrister), on the part of the patentees.—His opinion was, that the cause of explosion was to be attributed to the weakness of the metal, which was not of sufficient power to resist the inward pressure, attended by the heat of the water passing through the tubes, or cells, of which the cylinder was composed; the pressure was alike in every part—at least, such was his opinion.—In reply to a question put, as to whether he considered the accident might not be attributable to the wet brick-work—the witness expressed his confident opinion, that such was not the case; and that the inclosure of the cylinder in wet brick-work, and the heat being raised to 600°, had no effect on the metal, nor was it the cause of the accident.

Mr. George Nasmyth was the next witness examined: He had inspected the hot-water apparatus, referred to by the former witnesses, with whose description, as to its nature and construction, he fully concurred; the cylindrical oven was, as had been described, heated by water, through tubes, or cells, cast in the cylinder. He had examined the casting carefully at the point of explosion, and considered that the accident was to be attributed, almost entirely, to the manner in which the casting had been made—viz.: from the head, or column, above the line, or end of casting, which was vertical, not having been appended or cast, whereby the surge, or froth, would have been got rid of, and the casting been more perfect. He had no hesitation in saying, that there was no head in the present instance, and hence the impurity of the metal, or casting, at that particular point where the fracture took place: considered the conical plugs, or screws, used to be objectionable, and not calculated to stand the pressure; while punching the plugs, with the view of stopping a slight emission of steam, he held to be highly objectionable whilst the pressure was on. In his opinion, the wetness, or damp, of the mortar, or brick-work, had no effect whatever; nor did it have the slightest tendency to the accident—the real cause, he considered, was the want of soundness of the casting: he had examined the outer ring, and would condemn such a casting—indeed, in his opinion, any competent engineer must have condemned it as being porous; while he was confident, from the appearance it presented, that it had not been cast with a head, or runner. With pieces of ordnance, it was usual to cast an extra length, of 2 to 3 feet, so that such might be cut off, and leave the casting solid, and devoid of the scoria, or impurities. He (the witness) could decidedly speak as to the cylinder having been cast without a head: considers that 16*l.* a ton, the price paid by the patentees, for a casting of this description, far too low.

Mr. William Healy, a manufacturer of hot-water apparatus, who perfectly understood the nature of the apparatus, had examined the cylindrical oven, and more particularly the portion broken. Saw, in the outer ring, upon close inspection, that there was faultiness in the casting; but which was not very evident without examining it minutely, there being no spungy substance apparent in the skin of the casting, whether at the end, or circular part. The fracture was about 6 in. in depth, and the spungy character appeared about 4 in. down. His opinion and evidence was given on the internal fracture, having examined the boiler, and part which was burst off; but there was no appearance on the outer side, whether at the rim, or ends, or at the surface. As a workman, he considered that any defect in the casting would have been detected in tapping and screwing. The temperature of the water, at the heat described, doubtless acted on the part of the cylinder which was defective. The accident was in no way ascribable to the damp brick-work, which had, in his opinion, no effect.

Mr. Angier March Perkins, who stated that he was an engineer, and inventor of the system of heating water under pressure (which appeared to be a rival patent), assented generally to the evidence afforded; had examined the cylindrical oven, formed of cast-iron, which he considered an improper material for bearing such excessive pressure as 2000 lbs. to the square inch, or 500° or 600° of temperature; and further considered the metal defective. Had the cylinder been wrought-iron, in his opinion, the accident would never have occurred—it would most certainly not have burst in fractured pieces; but would have split open, if in pipes, allowing the water, or steam, to pass off, but not in the manner which had been the effect of this accident. Gun-barrels are generally welded, and are invariably tested. He had examined the fractured part, and had no hesitation in stating, that a casting of such a nature should not have been used, it being decidedly bad, judging as he did from the appearance it now presented; and could observe, from the outer surface, that it was imperfect, as the air-holes might have been seen antecedent to the explosion, had proper care and caution been observed. The hot water introduced in the cylinder would naturally have the effect of gradually heating the mortar, and drying the brick-work by which the cylinder is surrounded. He considered that the accident occurred from the apparatus not being properly erected (constructed), referring more particularly to the two cylinders—the one at the base being placed vertically, as the boiler, and the other in a horizontal position, as the oven, or conductor of heat. To these several cylinders were appended two pipes—the one forming the ingress, and the other as the egress—in which, from the cells, or pipes, running through them, there were 40 to 50 circulations: had examined the safety-valve, which he considered perfect; but the principle of which he did not approve for the purpose to which it was applied, without the addition of an expansion-tube—as any application of a like nature, at such high temperatures, was but of seldom occurrence. The machine being loaded 2000 lbs. to the inch, the pressure rises with the temperature—say, 700 to 500 lbs.; while it would otherwise remain at 2000 lbs. He (the witness) had seen another cylinder, with a rim or belt, which he considered would have been better for the purpose; while he had no hesitation in stating, that malleable iron would have been safer. In all applications of heated water, steam is generated; and it is to the pressure of steam that the accident might, in some measure, be ascribed.—On cross-examination, the witness admitted that he had a patent opposed to that of Messrs. Brown and Co., and had threatened proceedings against those gentlemen for an infringement. On being re-examined, he stated that, having his apprehensions of danger, he had cautioned Mr. Crace, the superintendent of the works.

Mr. Alfred Waterhouse, who was related to the deceased, had carried throughout the negociation for the erection of the oven, or heated cylinder: had visited Messrs. Brown and Co.'s works, accompanied by Mr. Dixon: saw Mr. Crace, the representative of Messrs. Brown and Co., on the 16th of December, and asked him if he could fix up an oven of a certain size, capable of giving 500° of heat; and showing him, at the same time, where the fire, or boiler, and oven, would be required to be fixed, and requiring to be informed, whether the heat would be emitted or carried to the upper floor by the means proposed by him? He (Mr. Crace) expressed himself, that such effect would be produced, inasmuch that from the heat rising the cylinder in the upper floor would be in an increased ratio. A letter from Messrs. Brown and Co. was put in, stating that the cost of erection complete, of three ovens, would be 110*l.*; two ovens, 77*l.*; and one oven, 55*l.* He (the witness) subsequently saw Mr. Crace. Everything, except the heat required—so far as the intended mode of application—was withheld from Messrs. Brown and Co., as it was merely an adjunct or application of heat to a patent secured by Mr. Dakin, and which they naturally did not wish to make public. On the 6th of January, Mr. Dakin received a letter from Messrs. Brown and Co., stating that it would require a month to give orders, cast, and dress the cylinder, and wishing Mr. Dakin's determination: an answer was accordingly sent on the 7th, accepting the contract, and directing that one cylinder should be erected, at a cost of 55*l.*—it being understood, that if more were required, the scale mentioned should be observed as having reference to the whole. On cross-examination the witness stated, that the late Mr. Dakin had entered into business at No. 1, St. Paul's Churchyard, on the 23d of June, 1844, having, for the four or five years immediately preceding, retired from business, and carried on a farm near Birmingham. He (the deceased) was formerly in partnership with Messrs. Ridgway and Co. He (the witness) did not consider him to be a man of scientific attainments, nor skilled in mechanics, or the construction of machinery.

The evidence on the part of the friends of the deceased being closed, Mr. James, on behalf of the patentees, stated, that it was not his intention to address the jury, or to offer any opinion—his duty would be confined to calling before them parties who were well known in the scientific world, and whose abilities were acknowledged; and also those workmen, or agents, of the patentees, who were cognisant of the circumstances attending the melancholy accident. He wished to afford every information, and, by the inquiry, to elucidate and to explain every point where doubt might exist. He felt confident the jury would, with that same unwearied attention which they had devoted to the evidence already afforded, evince the same towards the evidence he should submit.

The learned counsel then called Mr. G. Taylor, of West Bromwich, who stated he was an iron founder, and had been in business 10 to 12 years: the cylinder had been cast under his direction, and the pig-iron, of which it was manufactured, was of the best quality, and properly mixed, so as to give the relative strength required: it was not his duty to prove the casting, but such was made from order. It was the invariable rule to cast cylinders of this kind vertically, and on all occasions there was a runner, or head. The entire extent, or round, of the cylinder, some 6 or 8 in. in length, although such was only about one-third of the thickness of the cylinder: this runner, or head, he considered indispensable in all castings of this nature, to carry off the scoriæ, or impurities, and which was then afterwards broken off, and the head chiselled, or worked down by chisels, or other tools, to the required length of the cylinder. Was quite satisfied such was done in the instance under inquiry: the marks of the tools are round the cylinder at the top end at the present moment, which in itself afford sufficient evidence the casting was vertical.—In reply to a juror, the witness stated, that it was an open casting at top, without a flask: the metal flows from the runners, or head; and it is usual to have 6 or 8 in. head, which was cut off. Knew the object for which the cylinder was required, and had made many previously—indeed, he believed, all that Messrs. Brown and Co. had employed. There was no appearance, on its being sent from the foundry, that it was not a fair or proper casting: there might be some particles, or air bubbles, in the casting; but such did not go to any extent, or below the points, where the taps or screws were introduced; and, even were such observable, he should not have considered them as a defect—such being ordinarily the case in castings, and which were not all times readily, or even possibly, detected, without an accident, such as the present, took place, and showed their internal fracture. There was nothing at the surface, or skin of the iron, to indicate that the iron was bad or honeycombed, or that it was otherwise than perfect. Considers the cylinder and iron used in its manufacture well calculated for the purpose, so as to resist the effects of heat and pressure.

Upon cross-examination by Mr. Wilkinson, the witness stated, he had also cast plates of a similar nature. There was also a cylindrical oven cast with a rim, or rib, running round. Is certain that the cylinder in question was cast with a head of 6 or 8 in. The runner was round the head of the cylinder perfectly clear, and not simply a conduit. The mode in which this heading was removed, was by breaking it off to within about three-quarters of an inch of the end of the cylinder, which was then chiselled off, or worked down, by tools; this was invariably the course adopted. The head was not the entire thickness of the cylinder, but about one-third. Observed the quality of the metal on breaking off the head. Considered the casting sound; there are air bubbles evidently in the fractured part. Would not take upon himself to say, it was entire or perfect after such examination; but should consider it perfectly safe. It was impossible to avoid the bubbles; and which, in many cases, were in the body of the casting, and could not possibly be seen. Knows nothing as to the heat to which the cylinders were subjected. Mr. Crace and Mr. Wright have been at the works at West Bromwich. Had received directions as to the size of the cylinder and the number of cores, and strictly followed instructions: is a practical founder.—In reply to a juror, he stated, that it was usual to mix two or more descriptions of iron to obtain the required quality or strength. Has made several cylinders; and it was the invariable rule to cut off the head. Never saw one cast without a head. If the castings had been pronounced bad, or defective, by Messrs. Brown and Co., they would have been returned on his hands. Knows that they are subjected to proof in London.

John Hanagan was the next witness examined: He was in the employ of Messrs. Brown and Co., and was present at the time of the accident, from which he was now suffering, having then come from the hospital. He stated, that he (the witness) went to the warehouse, in Shoemaker-row, where the cylinder was erected, at half-past 12 o'clock on the day of the accident, accompanied by James Norris, one of the workmen in the employ of the patentees. The directions given to them were to light the fire, with the view of drying the brick-work, which had been built up around the upper cylinder the night before, and which was then in a damp state; he lighted the fire at about one o'clock—Norris was then present; recollects the deceased coming about that time, but did not speak to witness. He (Mr. Dakin) went away before Norris left, but returned in about 10 minutes; he then told witness to get up the heat; in his (the witness's), opinion the brick-work would not be sufficiently dry, so as to apply an extreme heat, or to work the apparatus, for three or four days. Mr. Dakin said, he would have a batch of coffee roasted that night, and he again quitted the premises in about a quarter of an hour. Mr. Crace (the superintendent of Messrs. Brown and Co.'s factory) shortly after came, with the view of seeing how matters were going on, and inquired the heat which had been obtained, and gave strict orders to witness that it should not be raised above a temperature of 400°. A person in the employ of Mr. Dakin, asked Mr. Crace if he could roast coffee that day; in reply to which he (Mr. Crace) stated, most certainly not, as it was necessary to dry the brick-work; and, moreover, there was a yard in depth of water to be got rid of—referring to the damp state of the brick enclosure; the thermometer was placed inside the cylinder, to denote the temperature. Mr. Crace then left—the witness being the only party remaining, whose duty it was to attend to the fire. Shortly afterwards Mr. Dakin again returned, when he inquired whether he (witness) was ready for the coffee; when he, in reply, stated that he was not. He (Mr. Dakin) then instructed him to get up the heat to 500°; and, in pursuance of the orders so given, he (the witness) accordingly opened the dampers, which had been previously closed by the witness, in accordance with the directions given by Mr. Crace, previous to his departure; and the required heat having been obtained, the thermometer standing at 500° in the interior of the cylinder, which was then removed, so as to introduce the roasting apparatus, or interior cylinder, into which the coffee was placed; the water was running out of the brick-work, and was lying on the flags, which he pointed out to Mr. Dakin as having exuded, or come, from the damp brick-work, and which dropped on the cylinder, or an iron lip attached thereto. Mr. Dakin, however, disregarded the circumstance; and that gentleman, as well as Mr. Dixon, who was with him, were fully sensible of the heat to which the water was raised. He (the witness) told Mr. Dakin half a dozen times, that he would not be able to roast coffee that day, and Mr. Dixon stated the same, and witnessed the water which had been emitted from the wet brick-work. When the dampers were shut off, and the cylinder in regular working, the lower cylinder, or boiler, would not require more than 6 inches of fuel (coke); but, at the time, or immediately previous to the explosion, there was nearer 2 feet: observed the steam, which afterwards condensed, coming from the brick-work at the time of the coffee cylinder being placed therein; the steam came from the brick-work, and was dropping down, as water, on the end of the cylinder, when the fracture took place, for about half an hour, when they heard a hissing noise. Mr. Dakin was then standing opposite the apparatus, holding the spindle, or handle, of the roaster; witness was knocked down by the explosion. The dampers were shut off by witness previous to Norris leaving the premises.

Upon cross-examination, the witness repeated, it was solely by the orders of Mr. Dakin that he increased the temperature of the water, and contrary to the express instructions of Mr. Crace. Had told Mr. Dakin more than once, that it was Mr. Crace's directions not to get the heat above 400°—the object being to dry the brick-work. Mr. Dakin said, he was determined to have a batch of coffee roasted that night, and hence the necessity of witness to get up the heat.

James Norris is a working engineer, in the employ of Messrs. Brown and Co. The cylinder was proved on the Thursday evening, the day previous to the accident, after it had been fixed at 460°, with the safety-valve placed at 2000 lbs. to the square inch, when cold water was pumped through it; while at that temperature, did not put any extra weight on the safety-valve: was present on the following day, and observed the state of the brick-work: was there between half-past 12 and 1 o'clock that day: assisted in regulating the valve. On that day, he instructed that the damper should be shut off, to keep down the heat to the required temperature, which was accordingly done: had no idea of the intention to roast coffee at that time—the only object of putting in the fire being to dry the brick-work, so that the apparatus might be set to work on a future day. He (the witness) had proved the strength of the cylinder at 3000 lbs. on the lever, to which he had applied additional force or weight, so as to give at least 500 lbs. more, or, in all, 3500 lbs. The apparatus was worked at 2000 lbs. Had he been aware of the intention of Mr. Dakin to have roasted coffee, it would have been his duty to have been present, and should have been particular in setting the valve; it would have been his duty to have watched the apparatus on its first going to work—such was their invariable rule; but no intimation had been given him of the intention of so doing: previous to his leaving the premises, he had given express instructions to the last witness.—Upon cross-examination he stated, that he was present the day previous to the accident, on which occasion he had punched the plugs: had done so of his own accord: was quite certain that he alone punched the wrought-iron plug, and not the cast-iron: had done so, it being the ordinary mode to drive or punch plugs; this was done, in consequence of a slight emission of steam at that point. He should have considered it dangerous to have raised the heat to 500° or 600°, with the brick-work in that wet state; there would naturally be an unequal expansion of the two surfaces of the cylinder—the outer being immediately in contact with the mortar, while the inner was closed up. The cylinder had been proved previous to its leaving Messrs. Brown's factory, as well as at Mr. Dakin's—it was the invariable practice to do so. The cylinder in question had been proved at 3000 lbs. the day before; and, in his opinion, the explosion must have been caused by something extraordinary, such as the wet state of the brick-work, when the safety-valve was placed at 2000 lbs.: has been in the employ of Messrs. Brown about 20 months: only punched the wrought-iron, not the cast.

John Wright is foreman at Messrs. Brown's works: remembers this particular cylinder coming from Taylor's (the founder's), about the middle of February. It was his duty always to prove the cylinders once, twice, or even thrice, previous to their being applied: has no doubt that he proved the cylinder in question, besides its having been proved by Norris, such being his duty and general practice. It was proved to a pressure of 3500 lbs.; the indicator marked to 2800 lbs. Salter's spring balance was employed; the plugs used were conical to the extent of about 1-16th of an inch; and, having taken hold of the cylinder, which was tapped to a depth of 1¼ in. to take the screw, or plug, were then twisted off. The work is executed in the best manner; indeed, it is his express instructions from his employers to use none but the best materials, and the like as regards workmanship; considers Taylor equal and competent to make the castings: does not know any mode whereby other tests would have been more effectual than those employed: remembers the cylinder being delivered; there was then no appearance of any defect in the casting, outer or otherwise: should consider the cylinder sound and perfect after the proof to which it had been subjected. He (the witness) was on the premises when the cylinder was erected, the day previous to the accident, and gave directions to the bricklayers to enclose the cylinder, which they did that night, not having commenced work until after 5 o'clock. On the day of the accident, he sent word expressly that only so much heat was to be applied as might be necessary for drying the brick-work, 300° to 400° being the extreme heat. Norris was perfectly competent to conduct the work: he (the witness) was not aware of the intention of Mr. Dakin to apply the apparatus as he did, or he should have been there. The patentees were to have had 200*l.* a-year for the use of the patent, besides the first cost. Upon cross-examination, the witness stated, that he considered the wet substance around the cylinder was calculated to split the cells across: does not believe the punching of the plugs would have produced any ill effect: did not see any steam escape: saw the cylinder when fixed, previous to its being bricked in; when he left, they were in the course of experiments: had seen the moulds in which the cylinders were cast. He admitted that the fractured piece of iron produced was honeycombed; and that there are air-holes which, however, did not show at surface: saw the iron the day after the accident, when the air-holes did not appear, they having been filled with some substance which had since been picked out. The cost of plugging was about 30*s.*; and most certainly, had he had the slightest conception that the casting was in any way imperfect, or unsound, he should at once have rejected it, and not have put his employers to the cost of tapping, or plugging, an imperfect casting. It was not spongy metal; but, from all external appearances, the iron would be considered by him as sound—the body of the iron is perfect; and, even at the point of fracture, he considered the metal good, and more especially after the proofs to which it had been subjected.—On re-examination, the witness stated that the castings had from Messrs. Taylor's had invariably been perfect, and strict orders were given, in every department, to spare no expense. In reply to the coroner, the witness observed, that the cylinder, as a vertical casting, could not have been cast without a head: had examined the ends of the cylinder—does not agree with the evidence of others, who state that it was cast without a head: he objected to a belt being cast around the cylinder, to give it greater strength, from the nature of the expansion and contraction of the different parts: the cylinder was cast 2½ in. thick, the usual substance being 1¼ in.: all the cylinders used by Messrs. Brown had been cast without a belt, or flange; and he considered them more safe: water, on coming into contact with heated iron, would fly off in the form of steam.

Dr. Ryan (Professor of Chemistry and Steam-Engines, and holding an appointment under Government) was the next witness examined: Had directed his attention to subjects of this nature, and had heard the evidence adduced as to the brick-work. Considered that it was highly imprudent to have subjected the cylinder to such a heat under the circumstances; as there could be no question but that there would be an unequal heat or tension on the respective inner and outer surfaces; the cold, or damp, would naturally reduce or destroy the heat, at the same time that steam was created. There could be no doubt but that a very great heat had been applied. The usual test, as to the safety, or strength, of the casting, appeared to have been resorted to; and he was not aware of any other course which would have been more effectual. One of the greatest tests, he considered, was that mentioned in the course of the evidence—of introducing, or injecting, cold water, while the heat was at 500°.—On cross-examination, the witness stated, he could not speak as to the effect produced by wrought-iron plugs. Has known a gun-barrel to burst, and be shattered from the effects of gun-cotton.

Mr J. Parkes, C.E.: Was formerly employed by Government to inquire into the causes of accidents in steam-vessels and boilers generally. Assuming the iron of which the cylinder was cast to be good, there is no reason why cast-iron should not be used for the purpose to which this was applied. It was true that, where the water was conveyed through wrought-iron tubes, when a crack takes place from excess of pressure, no injury—such as that caused by the accident forming the subject of inquiry—would be produced. He (the witness) would have no objection whatever to use any of Messrs. Brown's machinery or apparatus. To test is not only a matter of prudence, but one of necessity; at the same time, that he must say, he did not fully agree with the last witness, as to the hazard or danger attendant on the injection of cold water, while the cylinder was at a heated point. Is of opinion that, to have worked the cylinder, under the circumstances, was most imprudent. There could be no question that the outside of the cylinder was acted upon by the damp brick-work; and, as evidence of its state, he might have objected that some of the mortar had been projected, and still adhered to the ceiling. The damp body of brick-work, he considered, worse than a wet blanket—the moisture from which might have been readily absorbed. The moisture outside from the heat, emitted by the cylinder, would at once create steam, and carry off the heat; while such would become condensed, as described by the witness, Hanaghan, and ran down the sides, or ends, in the shape of water. Had the deceased been a scientific man, or had considered the effects likely to result, he would never have dared to submit the apparatus to the heat described. Mr. Taylor, the founder, had stated the casting to have had a head, and such must undoubtedly have been the case; while it was only natural to assume, that they would not have tapped it had any defect been apparent. Does not consider the iron bad to the eye; and, looking at the end, or outer portion, of the casting, there was nothing which would lead him to suppose that it was imperfect. He remembered a remarkable case, last year, which occurred in the United States, when a wrought-iron gun, which had been fired efficiently in the first instance, burst on the second discharge—the same charge being applied—by which accident, Mr. Jefferson, and several others, met with an untimely death. He spoke of this as an evidence that, even with wrought-iron, there was no security, or rule, which could be applied to determine the point of safety, as he has known a gun to burst and "go to shivers." With reference to the part of the honeycombed appearance which the casting had at the fracture, he would observe, that there was no pressure at the ping, which filled up the interstice, or end, of the cell; while, in his opinion, the brick-work was the sole cause—the iron having been got up by the high temperature of the water to a blue heat.—On cross-examination, the witness stated, that the effect might, perchance, have been prevented, had sand been introduced between the brick-work and the cylinder. He considered the precautions taken by Messrs. Brown and Co., and the instructions given by them, were praiseworthy. With respect to the safety-valve, he had no hesitation in saying, he considered it perfect at 2000 lbs., after the test of 3000 lbs. had been applied, with the water at the heat of 500°.—A juror here observed that, upon the examination of the premises, within 24 hours after the accident, there was no dampness apparent in the brick-work.

Dr. Andrew Ure was the next witness called: He stated, that he was not aware that any other course could have been adopted for proving the cylinder than that resorted to: had seen the apparatus at the factory, and in operation at the club-house, Hanover-square, of which he approved: considers it was, under the circumstances given in evidence, most imprudent to have raised the heat; it was impossible to have worked the apparatus fairly, or with safety, with two temperatures applied to the surface. There was a continued condensation going on at the upper or outer side; while the wrought-iron pipe, which formed the connection from the boiler to the upper or horizontal cylinder, must have delivered the water nearly red-hot, judging from the evidence which had been adduced in the course of the inquiry; and which, in passing into the upper cylinder, formed two half circles, meeting at the upper part of the ring, or tube, forming the conduit to the several cells, where the heat must have been excessive; as it radiates and loses its heat in its passage through the cells, before it escapes or passes away by the downcast or egress pipe, there could be no question as to the inequality of expansion. He considered Brown and Co. acted perfectly right in giving caution; there was no rule which could be applied to the effect produced on cast-iron by heat above a certain temperature, but the theoretical cause assigned he believed to be the practical cause. All castings of this nature were made with a heading; water would become red-hot at 700° to 800° Fahr.: considered a fair casting.

Mr. David Gilmour, of the Vulcan Iron-Works, had examined the cylinder, and did not see anything at surface which would indicate that it was faulty: would have used the casting if sent to him.—On cross-examination, the witness stated, he had seen some air holes in the fractured part, but not at surface. This closed the case for the patentees.

John Miles, carpenter: This witness was subsequently called by Mr. Wilkinson, and stated, that he had measured the lower cylinder, or boiler, in which the fuel was placed—it was 2 ft. 1 in. deep: had raked out the coke about three-quarters of an hour after the accident, which was then red-hot: considered the quantity about half a peck, or about 8 or 9 in. deep: was aware that in the interval, from the time of the accident, the coke would be partially consumed.

Mr. George Waterhouse was examined, simply as to the time stated by Mr. Crace, when the cylinder would be ready to go to work. The evidence of this witness was, however, unimportant.

The Coroner, in addressing the jury, pointed out the position in which parties were placed, where proof existed that there had been culpable neglect, or a want of ordinary caution displayed. In cases of gross neglect, they were liable, on the verdict of the jury, to a criminal prosecution; and it was, therefore, incumbent on the jury, coolly to consider and reflect on the evidence which had been brought forward in the course of this protracted inquiry—so that, by their verdict, they might exculpate from blame the several parties connected with the transaction. He would proceed to read the evidence—at the same time that he could not but observe on its conflicting nature; while it did not appear to him that there had been culpable neglect, gross negligence, or impropriety proved: if, however, such should be the opinion of the jury, they would, by their verdict, express the same accordingly; but he thought it impossible, with the difference of opinion which existed between scientific men, as displayed that day, that any such conclusion could be arrived at. It had, in the course of the evidence, been proved, that the patentees had used every precaution; that it was impossible to determine the state of the metal, except by the tests to which it had been subjected, and the difference of opinion which existed as to the nature or cause to which the accident was to be ascribed, was a matter which must be referred to the jury, who were to judge of the evidence afforded. He then proceeded to recapitulate the evidence, remarking, in the course of so doing, on the imprudent act of raising the heat, and the several points which were brought forward as to the badness of the casting, the application of cast-iron, and others mooted in the course of the inquiry; when the jury, having retired for about an hour, returned with the following verdict:—"Accidental Death. But the jury cannot separate without expressing their opinion, that the casting of the oven was defective; but, from the conflicting evidence of the scientific men, they are unable to decide as to the real cause of the explosion."

MINERAL COURT TIN MINE—LIABILITY OF ADVENTURERS.

Stannaries Court, Truro, May 10 and 12.

This was an action brought to recover 35*l.*, being the cost of a water-wheel, supplied to the mine, in which the defendant was an adventurer, and sued in such capacity by the plaintiff. It appeared that, in September last, a company was projected for working the mine in question, and the defendant became an adventurer therein to the extent of four shares, or 256th parts, his name being regularly entered in the cost-book. On the 5th of October, the first meeting of the adventurers was held at the Indian Queens, when certain resolutions were passed, and the list of adventurers made out, including the name of the defendant, but who was not present on the occasion—the purser's salary, as also that of the managing captain, were fixed at such meeting; the resolutions and list of shareholders were subsequently printed and sent to defendant, in common with the other adventurers. There were only seven adventurers present, but who acted as proxies or representatives of several who were absent; and at this meeting the captain (John Webb) was authorised to purchase a second-hand water-wheel of the plaintiff for the sum of 35*l.*, which was subsequently effected, and taken possession of by the adventurers, although such had not been used for the purposes of the mine. A second meeting was held on the 17th November, when it was determined that an account be opened with the East Cornwall Bank; but before the bankers would make advances, they required a guarantee, and a promissory note signed by certain of the adventurers, which were accordingly prepared and executed by the defendant as an adventurer; thus, as counsel contended, by such act, admitting that he was an adventurer. These documents, however, it appears were never acted upon, in consequence of the refusal of one of the adventurers in the mine to affix his signature thereto, and consequently the account with the East Cornwall Bank was never opened. Defendant had not paid any costs; and on being applied to by the purser on the 4th March, he contended that, not having signed the cost-book, he could not be held as an adventurer, or liable to any debts or obligations contracted on account of the mine, the whole number of the shares into which the mine was divided never having been allotted even up to the present time. On the part of the defendant, the question was raised as to the stamp attached to the guarantee being insufficient, but this objection was overruled. The next objection put forth was, that the whole of the shares not having been taken up or subscribed for, he, the defendant, was not liable, nor could be held as a partner, unless he had expressly agreed to go on and work the mine with a less number of adventurers than previously agreed upon; and the case of "Bourne *v.* Freeth, 9 Barn. and Cress., p. 632," was cited in support of the argument.

The Vice-Warden, however, expressed his opinion, that a line of distinction should be drawn between the case of Joint-Stock Companies, and mining conducted on the Cost-book System; and observed, he should leave the question thus raised for the jury to determine by their verdict.

Mr. Hocken, as counsel for the defendant, contended that Mr. Tippet was not an adventurer when the purchase of the machinery took place. It was true, he admitted, that antecedent thereto he had applied for three or four shares, and his name was entered in the cost-book; but it should be borne in mind that, at the first meeting of adventurers, held on the 5th October, a resolution was passed, and entered on the minutes, to the effect that no person should be entitled to shares unless the first call should be paid within six days after notice of the same. Hence it was natural for the defendant to consider, upon receiving copy of such resolution, that, if he did not comply with such terms, he would be excluded, as a matter of course, from any advantages attendant on the working of the mine; and, assuming that he, the defendant, had changed his mind, or, from other circumstances, had declined to become an adventurer, it was quite clear the option was with him; while, had any important discoveries been made, he would have had no right, under the terms of the resolution cited, to claim any participation therein. On the 8th December, it was admitted he signed the guarantee referred to by the learned counsel on opening the case, seeing at the time the names of Mr. Whitford and others attached to it in pencil marks. On the following day, however, he addressed a letter to the purser to the effect, that he, the defendant, having had an interview with Mr. Whitford, who had declined to take any shares in the mine, or be party to the guarantee, he must also decline having anything to do with that or any other new mining concern, requesting at the same time that his name might be at once expunged from the document which he had signed the previous day, as such act would render it unnecessary for him to communicate with the bankers. It was, therefore, plain under the circumstances thus put before the court, that the defendant had signed the guarantee under the mistaken impression that Mr. Whitford and the other parties, whose names were attached thereto in pencil mark, were *bonâ fide* adventurers. The learned counsel further contended that, even if it were held that Mr. Tippet was constituted a shareholder by this act on the 8th of December, it did not follow that he was such on the 15th October. It was clear that Mr. Simmons, the purser, had misunderstood the defendant in the conversation referred to in evidence, said to have taken place in September; for if he had full authority, why did he (the purser) first put defendant's name in the cost-book in pencil, and afterwards send it to the defendant, who declined signing it; whereas, it appeared that the purser subsequently took upon himself to sign Mr. Tippet's name in ink on the 17th November. As regards the claim of the plaintiff, it must be manifest that he never regarded the defendant as his debtor, or having any claim on him—the purser having, moreover, given an acceptance in payment thereof, but which had been dishonoured.

Mr. Chilcott, on the part of the plaintiff, having replied, the Vice-Warden summed up, putting it to the jury whether they believed the defendant agreed to take the shares in September, and whether he was liable to pay for this machinery. If they should consider that a shareholder was liable, although an adventure was not filled up to the number of shares originally intended, they would next have to determine, whether the present adventure was so far formed, and in operation, as to render it necessary to have this machinery; the engine had never been used, and they might think that the defendant would not be liable, or bound to pay, unless he had at some time agreed to its purchase, of which there was no evidence before the court. It was only right, at the same time, to observe that, after a mine had got into full operation, it might naturally be supposed that an adventurer would know what was going on; and if he did not remonstrate, the inference would be drawn that he was an assenting party. Something in the shape of expenditure was essentially necessary at the commencement of an adventure, such as paying for the sett, books, hire of rooms, &c.; but having machinery like the present, he considered to be a very different case.

The jury, after much consideration, returned a verdict for the defendant, on the ground that he had no shares, and also that the engine was unnecessary.—An entry of action by the same plaintiff, against Mr. Pinch, for recovery of the same amount, was withdrawn.

On the 12th inst., Mr. Chilcott moved for a rule *nisi* for a new trial, on the ground of misdirection; and, secondly, because the verdict was against evidence. With respect to the first point, he submitted that the only question for the jury was, whether or not the defendant was an adventurer, which question should have been left to them simply without any reference to the partnership being complete or incomplete, because the principles and cases relating to inchoate agreements did not apply to such a case as the present. In those cases, as raised in the courts above, there had always been prospectuses which had materially influenced the judgments; they were also cases in which a fixed capital was required, and the fault was that it was not subscribed; whereas in mines carried on on the Cost-book System the case was very different, as regarded the capital; and, by the universal custom of the county, it was wholly immaterial whether all the shares originally intended were actually taken up or not—that practice was so notorious, that he thought this court, being for the county, would take cognizance of it. The observations of his honour, the Vice-Warden, had, in his opinion, improperly influenced the minds of the jury; but, even if the question of inchoate partnership did apply, the real question for the jury was, did the defendant consent to carry on that inchoate partnership? Another point to which he would advert was, the distinction drawn by the court between the supplies of small articles, and that of the stamping engine, for the recovery of the value of which this action was brought. It appeared to him that, if the defendant was liable for anything, it could be only on the principle, that he was an adventurer; and if such was the case, there could be no doubt but that he was liable for all the supplies to the mine. This he put as the general law of the land; but, at all events, under the Cost-book System, the defendant was answerable, the engine having been ordered at a meeting of the adventurers; and assuming, as he did, that the defendant was *de facto* an adventurer at the time of the meeting, when such order was given, being held, he contended, that by the custom of the stannaries, an adventurer absenting himself from a meeting properly convened was bound by the acts of those present; and moreover, he held, that the defendant was further liable, having received notice that calls were required—it being his duty to

have attended subsequently, and ascertained the object for which such calls were made; and more especially that on the 6th of December, when he was at the office of the purser, on the business of the mine, he should have examined the cost-book resolutions entered therein. With regard to the second point, as to the verdict being against evidence, he thought the jury were much influenced by the resolution which made the shares forfeited upon non-payment of the call; this, however, although it gave the adventurers a right to take away shares, could not be considered as having any effect between a creditor and an adventurer, on the ground that a man could not take advantage of his own wrong; and again, one of the points on which the jury grounded their verdict was, that the defendent was no adventurer; but he (the learned counsel) submitted, that the evidence was so strong on this point, that the jury must have found against evidence.

The VICE-WARDEN observed, that it was generally the case, when the whole of the shares were not taken up in the first instance, that a resolution was passed among the adventurers, that those surplus shares should be merged in the others; but this did not appear to have been done in the present case, and he could not admit that the jury had been misdirected by the court. He could not concur in the opinion expressed by the learned counsel, that an adventurer was bound by the acts of any meeting of adventurers, except for such things as were proved to be reasonable and essentially necessary; and, assuming the water-wheel to have been unnecessary, then it was clear that those who were present at the meeting, and resolved on the purchase, must abide thereby, and be alone responsible. The question as to the defendant being an adventurer, or otherwise, solely rested with the jury, as to the view they entertained of the credibility of the evidence before them. He (the Vice-Warden) was, however, desirous of reconsidering the case, and should, therefore, grant a rule *nisi* for a new trial.

THE TUTWORK AND TRIBUTE QUESTION.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—In calling your attention once more to the method of setting mine labour, it is a matter of congratulation to the advocates of the new system, to find, at last, their opponents so strikingly convinced of the manifold evils of this once darling system, as now only to contend for two points; and on both of them, by your permission, I beg to offer, or make, a few brief remarks. The first point is contended for by "Fair Play"—viz.: Is it fair for a mine agent to offer a bargain to a labourer at a sum below what he conscientiously believes to be a fair price?—Yes, I contend, under the new mode of setting, the agent is perfectly justified in doing so—inasmuch, as the labourer has had proper notice, and sufficient time to make his calculation; consequently, he will rely on the merit of his own judgment, and not, as formerly, on that of the agent's; this would, as I have before stated, make our labourers men of figures, if not of letters—and so effectually remove from their minds the idea of the making-up and curtailing system, which, in my opinion, is tantamount to putting the men to work at a given sum per month; but, under the new method, the labourers would find their interest to centre in the time present, which would induce them to exert themselves to the very uttermost. At the time I published my address to "Mine Adventurers," in March last, I had no idea whatever that my views on the subject were previously reduced to practice; but, we are informed by the impartial agents of Perran St. George United Mines, that they have been working under the new method of setting for the last 15 months; and what has been the result?—why, the labourers' gettings, on the whole, have increased; and I can say with them, I regret that their labourers have not the advantage of this new method in their neighbouring mines. One might think that mine agents would have stood foremost in supporting the adoption of a method of setting mine labour, so very likely to improve the interest of both master and man; but so far there is not the shadow of a doubt they stand alone in opposing it. Now, in conclusion, I may remark, without the least intention to offend, had "Fair Play's" doctrine corresponded with his name, his remarks could not possibly have been so exceedingly partial throughout as they have undoubtedly been; and had he stiled himself a "slow coach," instead of "Fair Play," the most of your readers would have been much better able to account for his one-sided epistles.

The second point is contended for by Captain Seymour, which is to secure the interest of the working miners. Now, I can most positively assure him, that none of his working miners need fear the new system of setting—all that have any cause to dread it are the first cousins and slow coaches.—A MINE AGENT: *Milton Abbott, Launceston, May* 22.

THE TUTWORK AND TRIBUTE QUESTION.

SIR,—I think, if "Fair Play" will trouble himself to make a second reading of some of the previous communications on the subject of setting mine labour, he will find that, what he considers to be the main question at issue—namely: "Is it fair for a mine, or any other agent, to set, or even offer, a bargain to a poor labourer at a sum one-half below what he conscientiously believes to be a fair price?"—is sufficiently answered. Let him take, for instance, that of the Perran St. George United Mines' agents of the 8th of April last, and he will find that the greater part of that letter is an explicit answer to his question. They state—"At Perran St. George United Mines, about 15 months ago, we introduced precisely the same method as your correspondent of the 25th March proposed;" and, from what immediately follows, give ample proof that it answers very satisfactorily; and, furthermore, they state—"Our motive in establishing this mode of setting here was, to give fair play and equal chance to all parties. We cannot employ all of the individuals about us who want work; neither can we feel justified in making a selection"—giving equal proof of its justness. But fair play and equal chance does not exist under the old system; or, if it does, it is very rarely seen. How can fair play exist when every man may have his former bargain at the "captain's price," and no one who may be out of employ, be allowed a chance for it? Is it not equally as reasonable to give one man a loaf this month, merely because he had it last, and withhold from another because he had none. I perceive, that one of your correspondents, "A Cornish Miner," reminds the agents of Perran St. George United Mines, that settings, in most mines, are public; and that any stranger may offer for a pitch, or bargain, &c.; but it is well known to every mine agent, that it very rarely happens that one miner cuts another out of his bargain—indeed, they possess too much honour to do so; consequently, do not even allow themselves the chances which the old system affords. Under the new system, every man must refuse his bargain before he can get a fair price, in order that all may have chances alike; and no man considers it a breach of honour to take a bargain that has been refused. I will not trepass on your columns with anything further in reference to the advantages arising from this method of setting, as I think they have been already pretty clearly pointed out. In return to Capt. Seymour for the sympathy which he appears to evince towards me, in that latter part of his last letter, I beg to advise him to consider the utter folly of contending about a bone which has been already given him. If he will be good enough to refer to the same letter from the Perran St. George Mine agents, to which I have referred "Fair Play," he will find a literal admission of what he says in reference to old pitches.—JOHN RICHARDS: *Perran Porth, Perranzabuloe, May* 24.

THE TUTWORK AND TRIBUTE QUESTION.

SIR,—We solicit indulgence again, as this protracted question did not originate with us. As self-defence is interwoven in animal nature, we make this a plea for again intruding on your columns. Although we have the pleasure to find both our opponents to consent to the whole matter in our last lengthy communication; or, at least, have not brought forward a single objection against it—therefore, we must decide, as a correct and settled point, that the captain's price cannot, in all cases, be relied on, and that the workmen's judgment, in some instances, may be taken in preference to the agent's. We admire the tact displayed by "Fair Play," in bringing forward a new question, which, he says, is the main point at issue, and which has not been answered (have we not the right to infer from this, that all his other points are answered); however, we cannot find this question in either of his letters. The nearest that comes to it is on the 1st April, which is as follows:—"If the captain has fixed a fair price, why offer half that sum, when he knows it is not a just remuneration for the labour required to be performed." But the new question, on the 20th inst., is—"Is it fair for a mine, or any other, agent to set, or even offer, a bargain to a poor labourer at a sum one-half below what he conscientiously believes to be a fair price?" We answer the latter question, abstracted from its contingencies and connectional bearing on the real circumstances of setting mine labour, in *the negative;* but, taking the question in its true sense and spirit, as applicable to mining, it assumes, to our view, a different aspect. Now, assuming the mine agent has employment for 50 men, but that 100 men constantly attend the survey, is it more fair to select 50 out of the 100, and keep these in constant work, than to let the whole number have a fair and equal chance for the work at their own price. We do not see but the latter is equally as fair as the former; and, we think, more reasonable, and likewise an inducement for improving their mining qualifications. This question may likewise be legitimately answered on other grounds, and in other forms. "Fair Play" may, at some future time, say we never touched on his well-known axiom, "A fair day's wages for a fair day's work;" this is indisputable, and, we think, sound logic; but, we also think, the labourer has a right to fix his price on the said day's work; and if that should be less than the setter's price, the blame rests on the taker for having too little price.

We are happy to find Capt. Seymour's spirit of writing improved; we think there is more rationality exhibited in his latter than his former letters—he has made no remark on our last, but merely coupling ourselves with Mr. Richards, says, "*he,* like Perran St. George agents, exhibited sad judgment;" has he forgot that we are advocating that too much reliance must not be put on the judgment of mine agents: however, we find we have judgment enough to discover a deficiency in our judgment; perhaps, if our opponent possessed enough of this kind of judgment, he might derive considerable advantage from it, if it be of the right kind, so as to guide him steadily in a proper course, in his sayings, and, perhaps, in some of his doings. All that he said in his last letter, about the evil effects of the proposed mode of setting on the old pitches, we refer him to our first letter, on the 8th April, wherein we read the following:—"But we have some old pitches, at a high tribute, where we deem it prudent to offer the parties the agent's price at once, so that they may keep it in the best state of subsequent working."

We are pleased to find Capt. Seymour the miner's friend; but we fear the fervour of his sympathy only circumscribes a select portion of the miners; whereas we trust ours is extended to the mining world. We would congratulate ourselves on meeting the worthy captain at some future day, when we shall readily put forth the right hand of fellowship with a cordial grasp—trusting to find him, as he says, an honest-hearted and an open-minded man.—THE AGENTS: *Perran St. George United Mines, St. Agnes, May* 24.

[We insert in this week's Number the communications received on this protracted and now worn-out subject, which has become totally uninteresting; and, in consequence of the press of more important matter on our columns, we must decline publishing any further correspondence thereon.]

IS ELECTRICITY PONDERABLE?—Having seen it stated that Mr. Lake, of Portsmouth, had discovered by experiment that electricity is a ponderable fluid, and follows the law of gravitation, I tried the following experiment:—Having slightly charged a Leyden jar with moveable coatings, I removed them, and on examination of the interior surface of the glass with a proof plane at different depths, I found on applying the plane to a delicate gold-leaf electroscope, that the glass which had been covered by the coating had received an equal charge in every part. Now, Mr. Lake states that the electric fluid escaped first through the crack near the bottom of the jar, and then over the lip. Might not this have been occasioned by the distance of the exterior coating from the crack having been less than its distance from the interior coating over the lip of the jar? As the experiment has failed in my hands, will Mr. Lake be kind enough to communicate further on the subject?—CHARLES DIX: *Bell Grove, Welling, Kent, May* 15.

FATE OF A "PROVISIONAL DIRECTOR."—At the Insolvent Debtors Court, on Tuesday last, J. J. Morris petitioned under the Protection Act, describing himself as "Foreman to the General Woodcutting Company, formerly provisional chairman of the Canadian Land and Emigration Society, also clerk and auditor to the Merchant Traders' Ship, Loan, and Investment Association, and manager of the Underwriters' Registry-office." The case was unopposed, and Mr. Commissioner Phillips named a day for the final order, advising the insolvent in future to abstain from connecting himself with mock companies for the purpose of deluding the public. This observation did not apply to the General Woodcutting Company, which the insolvent stated was a respectable concern.

PROCESS FOR UNITING METALS AND METALLIC ALLOYS.

BY H. J. PULSBICH, Founder, Hamburgh.

The nature and object of this invention consists in an improved method of firmly uniting together metals or metallic alloys, possessing differing properties and values, such, for example, as bar-iron with cast-iron, and thus to obtain pieces of mixed metal suitable to make clasps, girders, panel squares, railway bearings, axle-trees, and other parts made use of in machinery and in building—possessing all the weight and the cohesion required, but much harder and more resistent in certain parts (for instance, those parts exposed to friction or direct action) than in others. The utility of such a process will not be doubted, and I have prepared specimens of bar-iron united to cast-iron, which resisted all the attempts of the hammer to break them. The following is the process I have adopted:—

TO UNITE BAR-IRON TO CAST-IRON.—In order to unite bar-iron to cast-iron—to make, for instance, a bar or rectangular girder, of which one-fourth the thickness shall consist of bar-iron, and the three other parts of cast-iron, or rather in the combination of one volume of these metals in any proportions, I proceed as follows:—I take a bar of iron, of the required thickness, and I plunge it into a cleaning bath, composed of nitric acid, or any other acid diluted with water. I then take it out of the cleaning bath, expose it to a red heat in a furnace, and plunge it again into the cleaning bath; by means of these operations, I get rid of all the oxide from the surface of the metal. To remove from this bar any acid which might remain, I wash it with any alkaline solution (as, for instance, sal-ammoniac), and I immediately plunge it into a bath of melted tin, where I allow it to remain until it has become well tinned over its whole surface. This done, I apply to the tinned iron at the side where it is to be united with the cast-iron an alloy or solder composed of copper and tin, in the proportions of 5 parts of copper and 95 of tin. The bar of iron thus prepared is then introduced to the bottom of a mould of the form and dimensions corresponding to the bar which it is wished to be produced, and it is kept down by iron bolts or nails, which have been previously well tinned. The cast-iron is then poured in a liquid state on the bar of iron, until the mould is filled. In this state a fusion takes place at the surface of the iron in contact with the liquid cast metal; and under the influence of the alloy or solder of copper and tin interposed, the two pieces of bar-iron and cast-iron unite so firmly the one to the other that it is almost impossible to separate them.

TO UNITE STEEL WITH CAST-IRON.—Follow exactly the same process as above described.

TO UNITE COPPER, BRONZE, CANNON-METAL, OR BRASS WITH CAST-IRON.—These alloys, as well as all those of copper, can be united by exactly similar means to those above described; except that instead of clearing the surfaces of the alloys by means of acids and alkaline solutions, as above-mentioned, the surfaces should be filed, and the union with the cast-iron effected at the lowest temperature possible, in order that the bar of alloy might not be melted. The proportion indicated for the composition of the alloy or solder, is that which appears the most suitable, where the pieces of metal to be united are of moderate dimensions; but, when they exceed moderate dimensions, it would be better to increase the proportion of copper employed.

In these examples, it is supposed that the different metals were united together on one side only; but, one of these metals may be united at two sides, or at two opposite or adjacent faces to the other metals, or even covered throughout its entire surface. Further, the pieces of metal may have a curvilinear, angular, or any other form, and the manner of moulding may be varied according to the rules practice has long since furnished in founderies.

PILE DRIVING BY PNEUMATIC PRESSURE.—In our account of the proceedings at the Society of Arts, on Wednesday week, in the last Number of the *Mining Journal*, in the concluding portion of Dr. Potts's paper, we omitted to notice that his plan is equally applicable to solid as to hollow piles. In all the former communications which we have received and published, the operation, we considered, was confined to hollow piles; but Dr. Potts has now a matured plan for sinking solid ones, with a facility almost equal to that which marks the operations on hollow ones. The pile is cut square throughout, as in the old plan; but, instead of having a pointed iron shoe at its lower end, to facilitate its being driven into the soil, it terminates, at the bottom, in a square chamber of sheet-iron, from which an elastic tube rises, the other end of which is connected with a large cylinder, or receiver, from which another pipe communicates with the air-pump. Sand, gravel, shingle, &c., are raised, by this arrangement, with the greatest facility, which, falling into the intermediate cylinder, or receiver, prevents all possibility of the choking of the air-pump. There is an opening, with an air-tight cover, in the lower part of this receiver, for emptying it when necessary. Even clayey soils, if not too compact and stiff, can be operated on; in which case a force-pump is employed continually to inject water, and loosen and mix the soil, which are at every stroke pumped out together. The plan is now brought to great perfection; and one of the viaducts, over a stream and valley, on the Chester and Holyhead Railway, built on hollow piles, on Dr. Potts's plan, appears as substantial as it was the first day it was erected. The invention is likely to lead to important results, and be of material assistance in the excavation of foundations of buildings to be erected on piles. [We understand that Mr. Francis Wishaw has recently interested himself in this invention, which we may now expect to find assuming that importance in public estimation which its value ought, ere this, to have obtained for it.]

LAMBERT'S SELF-ACTING WATER-CLOSET.—As improvements in the sanitory regulations of large towns are now the general theme, the inventor, the engineer, and the manufacturer, are employing their joint aid to develope them. Among the many inventions for preventing noisome smells in houses, we may notice a new water-closet, patented by Mr. Lambert, of New Cut, Lambeth, which is perfectly self-acting. On pressing the seat, and as long as it remains in that position, a stream of water, directed by a shield, is thrown round the pan, keeping it thoroughly clean; and, on removing such pressure, the cistern-valve is immediately closed, and the water ceases to flow. The lower part of the pan is connected with the exit-pipe, in such manner that, by means of a ridge, or partition, between them, a trifle higher than the bottom of the pan, the soil immediately floats away, while the pan is always sealed by the water. The invention appears to us to be very efficient, and is exceedingly simple; it is economical in cost-price, and not likely to get out of repair.

SAFETY MARINE APPARATUS.—The marine experiments daily exhibited at the Royal Polytechnic Institution, are highly interesting; among them we observed a newly-invented belt, patented by Capt. Smith, R.N., for the purpose of saving life from drowning; another which answers the double purpose of a bed and life-preserver, invented and patented by Messrs. Taylor and Sons Dover-road, Borough. These mattresses are stuffed with cork, which is cut by newly-invented machinery into exceedingly small fibre, about the size of small twine, and is nearly as soft as horse-hair; although admirably adapted for all kinds of mattresses, it is more particularly intended for shipping, as, they take up no additional room; and being articles of daily use are always at hand, and ready for service, in the event of a calamity arising from accident, shipwreck, or fire. The buoyancy of these mattresses are so great, that they will easily float 12 persons, and in the waist of a ship will resist musket, or canister and grape shot.

SUBTERRANEAN LAKE.—On the railroad line between Sandusky and Urbana, and near Belfontaine, is a small round prairie, containing about 80 acres—the Mad River Railroad, was originally laid out and graded across this prairie, but the workmen one morning discovered that a portion of the track had disappeared; large timbers were laid across the hole, and the superstructure again completed, when about 600 ft. of the road dropped down. Again the company sought to build a foundation—the timber upon 60 acres was deposited in this hole in the ground, and more than $10,000 expended, and still the hole was not filled. A slight curve around the prairie was then made, at an expense of about $1100, whereon the cars now run. Across this round prairie, runs a small stream—the soil is rich, consisting of decayed vegetable matter, some 6 or 8 ft. in depth, which is evidently a crust over a small lake; the water under this crust is 30 ft. deep, and fine fish are found in these pure subterranean waters. —*Cincinnati Gazette, U.S.*

IMPORTANT GEOLOGICAL DISCOVERY.—Nearly 30 years ago, Dr. Mantell described the form and structure of the teeth of that colossal extinct reptile, called the Iguanodon. At that time, however, nothing was known of the jaw, in which these teeth were once contained. But Dr. Mantell's continued researches have now rewarded him with the completion of his former interesting but partial discovery. He has found large portions of the upper and lower jaw of this extraordinary antediluvian, and they differ entirely in form from anything previously known in this class of reptiles. Indeed the configuration of the jaw is wholly unlike that of any other animal. This curious discovery has been made in the Wealden formation in the south of England; and Dr. Mantell intends forthwith to lay before the Royal Society an account of this interesting addition to our knowledge of the organisation of this singular reptile

LAND SLIPS.—The very severe and continuous rains, during March and April, have caused considerable change of surface in several hilly districts. Near Porlock, Somersetshire, about 8 acres of Culbone Wood was carried, in a mass, 100 yards towards the sea, carrying with it the trees erect, cutting away the road, and settling down near the church. The trees appear as healthy and thriving as ever. Beneath the spot where they now grow are extensive caverns, formerly frequented by smugglers. At Cotherstone, in Yorkshire, a great fall has also taken place. At the junction of the Tees and Balder is a hill, called the "Hag," 95 ft. high, precipitous on one side, and forming a picturesque object; an accumulation of water, formed in the fields above, found a natural drainage into the river, through the crevices of the rock. It having thus become undermined, a large mass, 70 yards long by 15 in breadth, gave way, falling into the Tees below with a tremendous crash, which was heard 2 miles off. The footpath round the hill, and the road to a water-mill, have been entirely lost sight of, and the whole spot has undergone a complete transformation.

Mining Correspondence.

ENGLISH MINES.

ANTIMONY AND SILVER-LEAD.—Captain John Vivian, of Truro, reports—Agreeable to my instructions, I went on Wednesday, the 26th of April last, for Pendoggett, and met Mr. Williams, the agent; and the following is my report of the Antimony and Silver-Lead Mines, in the parish of St. Kew, county of Cornwall. The Antimony and Silver-Lead Mines are situate in St. Kew, in an underlying piece of ground, extending nearly a mile in length, on the course of the lodes, and about three-quarters of a mile in width; and as this mine has never been worked but by the present company, it is impossible to say how many lodes there may be. On only one they are working, or, more correctly speaking, two veins, which will ultimately be one lode as they get 8 or 10 fms. deep, the veins carry good stones of antimony, from 10 to 15 lbs. weight; but it may be, as they make bunches, rocks of antimony will be produced from 4 to 5 cwts. The present shaft is about 4 fms. deep, with water in the shaft, and the deeper they get the more antimony they will meet. I send you a rough sketch of the workings, and also the number of lodes the mines contain, so far as the surface indications show (but there may be a great many more), as well as an estimate of the cost of what I would recommend should be carried into effect, &c. By so doing the company, I have no doubt, would realise sufficient profits to erect an engine, and sink a shaft, to meet the lodes at their junction. The silver-lead lode (which is Wheal Sarah lode) is to the east of the antimony lodes; and as there are not any workings on it, and as it is only known to exist, from its existence in Wheal Sarah from south to north, and being costeaned on in the middle of the mine, I can say but little, but that it is a large gossan lode on the back; but when the adit level is driven east to meet it, other lodes will be discovered. But before I close, I must state that, in my opinion, the Antimony and Silver-Lead Mines will well repay for the outlay I propose—for, in addition to the lodes already known, many more will be discovered in the course of driving the adit level; nor do I hesitate to say, that where the north and south lodes, underlaying to the east and west, form a junction, they will produce immense quantities of silver-lead, as well as antimony—perhaps, the greatest quantity of the former. In conclusion, I must say, that I am much indebted to Mr. Williams for his assistance throughout, as well as to Capt. Spargo, for his answers to my inquiries. Proposed outlay for an adit level and shafts, to intersect the lodes from the stream of water in the valley to the antimony lodes to the west, where the depth will be 25 fms. from the surface:—Adit level, in length to the west 124 fms., at 1*l.* 15*s.* per fm., 217*l.*; two adit shafts, 15 fms. each (30 fms.), at 2*l.* 5*s.*, 67*l.* 10*s.*; changing houses for the miners, 10*l.*; smiths' shop, bellows, anvil, and tools, with a house to contain the ore, 15*l.*; counting-house, 10*l.*; agency, 72*l.*; incidental expenses (say for timber if required), 50*l.*; and if to drive an adit level east, to intersect the lead and silver lode—say 60 fms., at 2*l.* per fm., 120*l.*; two shafts, 10 fms. each (20 fms.), at 1*l.* 15*s.* per fm., 35*l.*; timber (say), 20*l.*; erecting sheds for smelting antimony at Port Gavern, 50*l.*: making a total of 666*l.* 10*s.*—*May* 23.—Since I wrote you yesterday, the men in their night core cut a fine lead lode in the Malborough adit, about 18 in. big, with two fine walls, composed of mundic, lead, and spar, but I may say, nearly solid; I intend to put two men to drive a few fms. to hill; from its present appearance, it will far more than pay for working; there can be no doubt but that it is very rich for silver; I have shown it to several miners and captains in this neighbourhood, and they all agree that it is as good as ever they saw.

BARRISTOWN.—Capt. Thomas Angove (May 20) reports—We have resumed sinking the winze in the bottom of the adit level, to communicate with the cross-cut from eastern flat-rod shaft; we find the quantity of water in it much the same; the lode is large, producing about ½ ton per fm.; the stopes are producing rather less than ½ ton per fm. at present; the pitches in the back of the level look much the same as last reported. We have been obliged, from the increased quantity of water, to suspend the adit shaft east of Nangle's for the present. The adit level is now completed to Nangle's shaft, and we shall commence to drive the end east of it, on course of lode, on Monday next; the cross-cut is about 2 fms. south of eastern flat-rod shaft. There is no change in the end east from Slob shaft in the 28 fm. level. The pitches in the old mine are producing a small quantity of ore.

BEDFORD UNITED.—Capt. Thomas Ellery (May 24) reports—At Wheal Marquis, the sumpmen are still engaged driving the cross-cut south. In the 90 fm. level east we are driving by the side of the lode; the lode in the 90 fm. level west is without alteration—ground favourable; the lode in the stopes, in the back of the 90 fm. level east, is worth 60*l.* per fm.; and in Hodges's rise, in this level, the lode is at present hard, producing good stones of ore. There has been no lode taken down in the 80 or 70 fathom level since my last; in Evans's winze, in the 70 fm. level, the lode is 2½ ft. wide, producing some good ore. The lode in the 47 fm. level east is unproductive. At Wheal Tavistock, the lode in the 47 fm. level, west of Phillips's shaft, is 1 ft. wide, producing good stones of ore—suspended. There has been no lode taken down in the 25 fm. level, east of the south engine-shaft—suspended; in the adit level east there is no alteration.

CALLINGTON.—Captain J. T. Phillips (May 22) reports—The ground in the north engine-shaft is favourable for sinking below the 100 fm. level; in this level, driving south, no alteration has taken place—the ground being still hard, and intersected with cross branches. In the 90 south, we are opening ground that will work at a moderate tribute; in the 90 east, the ground is favourable for driving. In the 70 east, the lode is 3 ft. wide, intermixed with mundic; in the stopes, the lode varies from 2 ft. to 8 ft. wide, producing, on an average, six tons of ores per fm. In the 50 fm. level east, we have just got through a cross-course 3½ ft. wide, in about 8 fms. to the east of the large one; we have not yet seen the lode to the east of this. At the south mine, in the 125 north, the ground is of a favourable character—the lode has not been taken down. In the 112 north, the lode looks more promising; in the south end, we are opening tribute ground. The 100 north is opening ground that will work at a low figure; the ground is of the most favourable character; the winze from the 90 is holed to this level—the lode, towards the bottom of the same, will produce half a ton per fm.; the 90 fm. level is driving through ground that will pay for taking away at a low tribute—this part of the mine looks better than we have seen it for some time past, and shows a considerable improvement from the upper levels. Preparations are being made for sinking Kelly Bray engine-shaft below the 35 fm. level, the shaft being nearly dry. In the 25 west, no alteration has taken place.

COATLITHE HILLS.—Capt. J. M. Paull (May 20) reports—I have discontinued opening eastward on the vein, and have put the men to sink on it; it is principally composed of rider, spar, and soft clay, with very good stones of ore interspersed through it, and has every appearance of improving in depth.

COMBLAWN.—Capt. James Hosking (May 19) reports—In writing a hasty report yesterday, I did not say anything about the middle lode in the 15 fm. level—however, we have seen something more of it now, and I will give you the particulars. We have commenced driving from engine-shaft; east on the lode it is from 15 to 18 in. wide, composed of spar, prian, flookan, iron pyrites, and silver-lead ores; its general character is, indeed, very satisfactory at such a shallow level, and I expect, ere long, we shall be able to save some good work from this as well as the main lodes; in all probability we shall have 5 fms. more to drive in this level, before we intersect the eastern cross-course; this will ultimately make a trial of both; should there be any chance of forking the water, and driving the bottom cross-cut again, we shall then be forced to suspend the driving of this level until some future period. The lode in the new whim-shaft is producing some good work, and in referring to the price given for sinking, you will find that six men must go down several fathoms in a month, to earn fair wages; they must break a great deal of stuff, and I hope a good heap of ore. As Wheal Martha sale is so near at hand, we shall have an opportunity of purchasing some dressing materials very cheap, for I intend, if all be well in the ensuing week, to make some addition to our heap of dressed ore. We are still clearing the old workings east at the higher mine, to find the cross-course if possible. It is evident, from the attle which we are drawing up, that the ancient miners must have had a good lode, as we have picked out some good stones of lead ore. I will write you again on Monday next, with all particulars relative to the different workings, &c.

COOMBE VALLEY SLATE QUARRY.—The purser, Mr. C. S. Richardson (May 26), reports—At the Alshara Quarry, we are now upon a bed of s late that will produce a great quantity. It is of excellent quality; a sample of it is sent to our office in London, and is worthy any person interested in the slate trade going to see—finely laminated, perfectly straight and parallel, not warped, solid, large, and of good colour and quality. From this floor we may get every sized slate in use, but I do not think we shall obtain slabs over 20 ft. in a stone. At the Ilana Quarry, we are producing some very fine slab, as well as some roofing slate. We have a difficulty in getting a sufficient number of cleavers, but I am in treaty with some quarrymen in Wales for a supply. The incline railway, and its machinery, at the harbour, I hope to get completed by the end of the present month. We are ready now to receive tenders for freight, and to charter two or more vessels for constant work. We shall lay two large buoys out at the mouth of the harbour, whereby vessels may warp out at any time of the wind and tide. By the new machinery in course of erection, we expect to be able to load a vessel in five hours.

CWM ERFIN.—Captain S. Nicholls (May 20) reports—We have not done much in the mine this week, on account of the water being in the mine, for want of water for the wheel; we have had a few showers this last day or two, which will enable us to get the water out, so that the men may go to their work on Friday morning—so there is no change in either bargain since the last report. I have no ores ready for the market; but as soon as we have a change in the weather, so that I have water, there shall be no time lost in making ores ready for the same. We shall be better off for water when the Bwich ponds are ready, and can have them full of water.

DEAN PRIOR AND BUCKFASTLEIGH.—Capt. H. Choake (May 23) reports—I beg leave to hand you a list of the produce of the samples by two assayers, as follows—viz.: No. 1 parcel, 3 tons 17 cwts. 2 qrs., assayed by Mr. J. H. Harvey, 6½; by Mr. Penrose, 7½. No. 2 ditto, 8 tons 14 cwts. 3 qrs., ditto, 4½; ditto, 6¾. No. 3 ditto, 1 ton 13 cwts., ditto, 8¾. No. 4 ditto, 5 tons, ditto, 4; ditto, 4. Mr. James Harvey's was the first assay; Mr. Richard Penrose's are what we term retrials—that is, when the samples do not come up according to the calculations made by the first assay, we send them off to be

retried, in order to be satisfied respecting the value of the ores; the sample that brought 8*l.* I did not send away again, although I expected it would have brought more, being a better quality, I have sent off the samples to get assayed for 4 tons 7 cwts. 2 qrs. weighed off, in addition to what is inserted above. The produce is low, but that is no criterion as to the value of the mines; for we are well aware that the ore in the stone is very good, and there is every prospect of getting it solid in the deeper levels, which induces me to say, that I believe that this will be a lasting and profitable mine.——*May* 24.—The engine-shaft is sunk below the 30 fm. level about 9 ft.; the sumpmen are engaged about the necessary work in the shaft for fixing the cistern, and lengthening the main rods in the shaft, in order to fix the pitwork to that level. In the end, driving east in the 30, or bottom level, the lode still maintains its size and character—price for driving, 3*l.* 8s. per fm.; in the end west of the cross-cut, in this level, the lode is from 7 to 8 ft. wide, composed of capel, iron, mundic, and calcareous spar, and producing some stones of ore—no alteration in price.

DEVON AND COURTENAY.—Capt. N. Seccombe (May 23) reports—In the end, driving west on the gossan lode, the lode is 15 in. wide, composed of mundic, spar, and stones of ore. In the end, driving east on the south lode, the lode is 1 ft. wide, composed chiefly of mundic and spar, with occasional spots of ore. The lode in the winze, sinking below the 40 fm. level, on the south lode, is 15 in. wide, producing good saving work. In the end, driving south on the cross-course, the ground continues favourable for driving, but no lode has been discovered this week. The shaftmen have nearly completed the sinking of the engine-shaft to the depth at which we intend to drive to intersect the lode. We expect to commence driving the early part of next week.

DRAKE WALLS.—Capt. R. Williams (May 22) reports—In Brenton's shaft there is no alteration since my last as to prospects—being still disordered by a large sparry cross-course; we shall complete the sinking of this shaft to the 60 by the end of this month, and commence stoping below the 50. In the stopes, east of Brenton's, below the 40, there are good branches; in the stopes, west of machine shaft, sinking below the 40, there is saving work; in machine shaft, sinking below the 50, there are good branches; in the stopes, east of machine shaft, below the 40, there is saving work. In the stopes, east of machine shaft, behind the 33 end, there are very good branches; the 33 end, going west, being still disordered by a large slide, running nearly horizontally with the drivage, under which we have the good branches of tin, referred to above; in the stopes, east of footway shaft, there is no alteration. The new engine is down, and the men have commenced driving; in the stopes there are good branches of tin; we are still driving by the side of the north lode—the ground being less expensive for driving. We propose sampling on the 29th inst., and hope to get 18 tons for the month, under the new process of dressing.

EAST CROWNDALE.—Capt. S. Paull (May 20) reports—The ground in the 58 fm. level north is still very difficult to drive, having branches of capel and spar intermixed with the killas. The ground in the 58 fm. level south continues just as it has been for some time past. There is an improvement in the 47 fm. level west, on the north lode; it is now 18 in. wide, composed of spar, capel, peach, and good stones of ore. I hope, from its appearance, a bunch of ore is nigh at hand. The winze, below the level, is not so good as it was when last reported upon; it is about 20 in. wide, composed of capel, mundic, peach, spar, and ore. In the stopes, in the back of this level, there has not been any lode taken down in the past week. The lode in Diamond's engine-shaft, at Rix Hill, still continues to hold on in size, 4 ft. wide; it is composed of spar, capel, elvan, peach, and spots of tin. The lode in the end, driving on the south lode, at Rix Hill adit, is of a most kindly description; it is 2 ft. wide, composed principally of peach, with spots of tin, and most excellent ground to drive on.

EXMOOR WHEAL ELIZA.—Captain Whitford (May 23) reports—Since my last we have cut a caunter lode, about 2 ft. wide, in the 12 fm. cross-cut, bearing north-east and south-west; its underlie is north-west, and is composed of gossan and quartz, though to cut lodes in any mine is very desirable, yet this will not facilitate our progress much towards intersecting the great north lode, which I have no reason to alter the time I named in my last—nevertheless, you are justified in your anticipation of brighter and better days.

HOLMBUSH.—Captain William Lean (May 23) reports—The lode in the 182 fm. level, west of the diagonal shaft, is composed of several small branches of spar, mundic, and spots of copper ore. The lode in the 120 fm. level south is 4½ ft. wide, composed of white iron, spar, and lead, worth 5*l.* per fm. The lode in the 110 fm. level south is 4 ft. wide, producing saving work, and opening tribute ground. The lode in the 100 fm. level south is 3 feet wide, composed of soft spar and lead, worth 5*l.* per fm.; the lode in the rise, above the back of this level, is 2½ ft. wide, composed of spar and stones of lead—saving work. The flap-jack lode, in the 100 fm. level east, is 3 ft. wide, composed of mundic, spar, blende, and stones of copper ore of good quality. The lode in the 90 fm. level south is 2 ft. wide, composed of soft spar, flookan, and stones of lead. Our parcel of lead ores was sold on the 17th inst., to Dr. Somers, for 17*l.* 13s. per ton, which shall be shipped as early as possible.

KIRKCUDBRIGHTSHIRE.—The agent (May 20) reports—Having communicated the rise in the back of the 50 fm. level with the winze on the north lode, we have now set two ends to drive west in this level. The main lode is about 5 ft. wide, composed of a compact porphyritic killas, with sulphur, soft spar, and flookan—a very kindly lode. The north lode is about 2 ft. wide, underlying south about 2 ft. in a fathom, and inclining towards the main lode going west, from which it is now about 2 fms.; it has a kindly spar with it, and worth about ½ a ton of lead per fm. The lode in the 40 fm. level, west of Stewart's, is large and kindly, but not quite so well for lead as last week. The 40 ends, east and west of Keith's, are much the same, so is the end on the caunter lode. In the 30, west of Keith's, the lode became small in the beginning of the week, with hard ground; but it has since much improved, and is now become a large fine lode again. The 30, east of Stewart's, is still about 3 ft. wide, with fine stones of lead in it. We beg to send you our setting list for tutwork and tribute as usual.

LEWIS.—Captain S. Noell (May 20) reports—The lode in the 70 fm. level, west of sump-whim shaft, is 2½ ft. wide, yielding some tin, and very promising; in the same level south we have intersected the south branch, worth 4*l.* per fm., the tin of which is of very rich quality. The lode, in the 60 east, is 2½ ft. wide, producing some good work for tin; the lode in the 60 east, on the south branch, is small and disordered by a cross-course; the lode in the 60 west, on south branch, is much improved since last report, now worth 50*l.* per fm. The lode in the 50 east, on south branch, is at present small and unproductive; the stopes in the back of this level are yielding good quality tinstuff. The lode in the 40 east is 5 in. wide, opening ground that will work at about 9s. tribute.

LOSTWITHIEL CONSOLS.—Capt. J. Offord (May 23) reports—The adit is extended 7 fms., the ground being very hard, though not uncongenial for ore. We have cut a small branch (seen in the shallow level above, but not reported as of any consequence), containing a vein of silver-lead. We take this as a favourable omen of a mineralised country. We are still, by estimation, 6 or 7 fms. from the Milham lode. The men are striving hard to drive this distance by the end of next month.

MENDIP HILLS.—Capt. F. C. Harpur (May 22) reports—I have nothing particular to inform you respecting the lode in the 38 fm. level south of shaft, as it presents much the same appearance as last reported—viz.: 1 ft. wide, composed of iron, white spar, and flookan; ground hard for driving. In the slag department, we continue to remove the top rubbish from off the beds of slags, towards the eastern part of the valley, as fast as possible, where we find the beds of stuff varying in thickness from 5 to 11 ft.; the quality of which continues much the same as for some time past.

SOUTH WHEAL BETSEY.—Capt. John Spargo reports—We have discovered another splendid lead lode; it is a regular north and south course. The lode will average 5 ft. wide, so far as we have opened on it at the surface; it is composed of rich gossan and beautiful spar, impregnated with lead, underlaying east. At Wheal Friendship, the deep adit is brought up between both the lodes; and by driving a cross-cut west about 4 fms., we shall intersect this lode at the depth of 40 fms. from surface; this most splendid lode runs on the western extremity of our sett, adjoining the Great Wheal Betsey; it is a parallel lode to the Wheal Betsey lode we are now driving to cut: its horizontal bearing is about 25° west of south. We have not yet commenced driving to cut this lode.

SOUTH WHEAL MARIA.—Captain George Francis (May 23) reports—Since our last general meeting, the cross-cut north of the engine-shaft, in the 20 fm. level, has been driven 12 fms., making in all 40 fms. The principal lode on this side of the shaft is 80 fms. north at surface, on which a shaft has been sunk 4 fms., where it appeared to underlay about 6 in. in a fm. north; when we had reached 5 fms. north of the perpendicular of the lode at surface, which would be 1 ft. in a fathom underlay, we intersected some branches, composed of mundic, prian, &c., and which had a similar appearance to the lode at surface, as to its component parts; but, not being satisfied, we continued the cross-cut 5 fms. further, which made 2 ft. in a fm. underlay, without succeeding in meeting with anything more in the shape of a lode, when it was considered advisable to suspend further operations on this side for the present; but, in order that there may not be a doubt as to our having reached the lode, I should be glad to see a few fms. more driven in this direction, as I have known most valuable lodes missed, by omitting to drive a few feet only. Our operations at present are confined to cross-cutting south, in order to reach what is termed the great south lode, and where we now are to within 10 or 12 fms.; this lode, it is well known, is from 4 to 6 ft. big, composed of a very promising gossan, with some yellow copper ore in it; and, in repairing the weir-head last summer, this lode was seen in the River Tamar, and producing some rich copper ore; I have great confidence that on reaching it in the 30 fm. level, from its general appearance on the back, we shall have to report most favourable as to its value. We are now driving on a caunter lode, producing some spots of lead ore, underlaying a little north-east. Our great lead lode has certainly a very kindly appearance, as it has already produced some excellent rocks of lead ore in a most promising gossan, within 12 ft. of the surface in different places on the back; and on cutting the south lode, should it be found productive, which I have very little doubt of; then our 30 fathom level should be extended west, back to intersect the same, and where it would be from 50 to 60 fms. deep from the surface; and by driving about the same length on a most promising lode already named, I fully calculate that large returns of lead ore will be made. Our machinery being in a very defective state, we had lately to put it under repair, which left in some water; and while the men were prevented from working in the cross-cut, they were employed in sinking a shaft on a caunter lode in our north boundary, on what is called Wheal Williams' shaft; in the south lode we have sunk 7 fms. on a lode 2 ft. big, on the average, without any underlay, composed of prian, &c., with some good stones of lead ore and gossan.

SOUTH WHEAL TRELAWNY.—Captain William Jenkin (May 22) reports—We are still driving the cross-cut, west of Snell's engine-shaft, in the 30 fm. level, under adit in about 3 fms.—ground favourable.

STRAY PARK AND CAMBORNE VEAN.—Captains Richard Eustice and Elisha Ralph (May 22) report—In the 50 fathom end, driving west, the lode is 1 foot wide, yielding 1 ton of ore to a fathom. In the 60 end, driving west, the lode is small and unproductive. In the 70 end, driving west, the lode is small and unproductive. In the winze, sinking below the 80, the lode is 1½ ft. wide, yielding 2 tons of ore to a fm. In the 90 end, driving west, the lode is 1 ft. wide, yielding stones of ore; this end is now in Wheal Francis sett; in the rise, above the back of the 90, in Camborne Vean, the lode is 1½ ft. wide, yielding 3 tons of ore to a fm. In the 100 end, driving west, the lode is 3 ft. wide, yielding 6 tons of ore to a fm. In the 110 end, driving west, the lode is small and unproductive; in the winze, sinking below the 110, the lode is 1½ ft. wide, yielding 2 tons of ore to a fm. In the rise, above the back of the 120, the lode is 1 ft. wide, yielding stones of ore. In the 150, driving west, the lode is 2 ft. wide, yielding 2 tons of ore to a fm.; in the cross-cut, driving south in the 150, the ground is favourable—price, 5*l.* per fm. In the 180 end, driving west, the lode is 1½ foot wide, yielding stones of ore; in the 180 end, driving east, the lode is small, containing stones of ore. In the cross-cut driving south, in Wheal Francis, we have not yet cut the lode; we expect to do so shortly. The tribute ground is looking very well; but, owing to the great depression in the copper market, it requires all our exertions to meet the current cost of working.

TAMAR.—Capt. J. Sprague (May 22) reports—In the 175 end, south of the shaft, the lode is 1 ft. wide, composed of capel and ore, producing good work; in the same level, driving north, there has been no lode taken down, but the discovered wall is presenting a favourable appearance. In the 160 end, south of the shaft, the lode is disordered by a small slide course, and unproductive. In the 145 end, the lode is 18 in. wide, chiefly composed of capel, intermixed with ore. In the winze, sinking in the bottom of this level, the lode is 2 ft. wide, yielding work of good quality. In the 135 end, the lode is 2 ft. wide—saving work; in the winze, sinking below this level, the lode is 18 in. wide—rich work, of a promising appearance. At North Tamar, in the 70 end, the lode is 2 ft. wide, 6 in. of which is good work. In the winze, sinking in the bottom of the 60 fm. level, the lode is 3 ft. wide, 1 ft. of which is producing work of a good character. In the tribute department, our prospects generally are just the same as for some time past.

TINCROFT.—Capt. P. Floyd (May 23) reports—At North Tincroft, in the 100 fm. level east, the lode is worth 5*l.* per fm; the 100 fm. level west is worth 10*l.* per fm. The 90 fm. level east is worth 8*l.* per fm; in the bottom of this level we are sinking a winze to ventilate the level below—the lode is large and kindly, in the 90 fm. level west, the lode is 2 ft. wide, with good stones of ore—in this level we expect, in a short time, to get under some good ore ground. In the rise, in the back of the 80 fathom level east, the lode is worth 16*l.* per fathom; in the 60 fathom level east, the lode is 6 ft. wide, and tinny throughout. On East Pool lode, the 80 fathom level west is worth 5*l.* per fm. The 70 fm. level west is worth 12*l.* per fm. At Stainsby's shaft the water is much quicker than we anticipated; but we expect, by the end of this week, to be in a position to resume driving to meet the adit coming from East Wheal Crofty. The 142 fm. level east, on Highburrow lode, is worth 10*l.* per fm. The stopes in the bottom of the 100 fm. level are worth 18*l.* per fm. The 90 fm. level west, on Chapple's lode, is worth 20*l.* per fm. The 80 fm. level west is worth 18*l.* per fm. In the 58 fm. level east, from Chapple's shaft, on Dobres's lode, the lode is 15 in. wide, with spots of ore; on the same lode west, the lode is 18 in. wide, with very good stones of ore. We expect, by the end of this month, that Blight's shaft will be cased down to the 58 fm. level. At Wheal Providence, the 33 fm. level, east on Druid's lode, is 2½ ft. wide, with spots of ore, and very kindly; in the 33 fm. level west, the lode is 2 ft. wide, of a promising natur

TRELEIGH CONSOLS.—Capt. William Symons (May 20) reports—In the 120, east of Christoe's, on the lode, the lode is about 3 ft. wide, with very little mineral—the ground favourable, 8*l.* 10*l.* per fm. In the rise, above the 100 east, the lode is 15 in. wide, with occasional stones of ore; this will soon be holed to the pitch in the bottom of the 90. Garden's shaft, below the 100, is sinking in the country; in the 100, west of ditto, the lode is 3 ft. wide, and hard, but more promising, with good stones of ore; the 100, east of ditto, is suspended. In the 90, west of ditto, the lode is very small—cross-cutting in search of more lode. In the rise, above the 80, the lode is about 15 in. wide, with stones of ore. In the 70, west of ditto, the lode is 2 ft. wide, worth 10*l.* per fm.; in the winze, below the 70, on the 80 rise, the lode is 18 in. wide, with a small quantity of ore. The winze below the 60 (new) is only commenced to-day; its value will be forwarded in the next report. In the 50, west of ditto, the lode is 15 in. wide, worth 5*l.* per fm. In the adit east, on Wheal Parent lode, the lode is 2 ft. wide, worth 6*l.* per fm. The adit cross-cut north is to cut Wheal Orphan lode. The 60 west, being poor, is suspended, while sinking the winze below. The 100, east of Garden's, is very poor. The men are cross-cutting north in the 90 fm. level, east of Garden's, in which we hope to cut another part of the lode.

WEST WHEAL JEWEL.—Captain R. Johns (May 22) reports—In the 57 fm. level, west of Williams's cross-course, on Wheal Jewel lode, the lode is 2½ ft. wide, worth 14*l.* per fm.; in the 57 fm. level east, on the same lode, no lode taken down in the past week. In the 70 fm. level west, on the same lode, no lode taken down in the past week; in the deep adit, west of Hodges's cross-course, on Wheal Jewel lode, the lode is still improving. In the stopes, in the back of the 12 fm. level, west of Pryor's winze, on Tolcarne tin lode, the lode is 6 in. wide, worth 35*l.* per fm.; in the deep adit, west of Quarry shaft, on the same lode, lode not taken down in the past week.

WEST WHEAL MARIA.—Capt. T. Rodda (May 23) reports—The western engine-shaft is down to the 74 fm. level, and we hope to resume the driving south in this level by the latter part of this week. The south lode, in the 34 fm. level, west of Vivian's shaft, is about 3 ft. wide, at present unproductive.

WHEAL TRESCOLL.—The purser, Mr. C. S. Richardson (May 25), reports—The mine at present is looking very favourable. The B lode is gone down with a rich pith 12 in. wide; the lode is altogether 12 ft. wide, but it is split in the middle, and so formed into two lodes. This will not be found so far in depth, as from their underlay they must unite, and form one large lode, at about the 20 fm. level; the work is very rich, what little has been brought to grass. The C lode continues about the same—very good work; four men this last month, whose cost was 14*l.*, raised nearly 40*l.* worth of tin in three weeks; we expect this lode will be very productive in depth; at present we are only 6 fms. from surface. The D lode is poor, being only 3½ fms. from surface; we have thus far proved our main lodes, and several of the branches. Our stamps will be complete in about a fortnight; the new wheel is ready, and the leats carried home. We sent a small batch of tin, about ¾ ton, to the St. Austell Smelting-Works last Friday, to ascertain its value, and it realised 52*l.* 5s. per ton; this is, therefore, only 4*l.* per ton under the best grain tin. I think there are very few mines in the county will make this price of their produce. We shall commence the engine-shaft next week, and go down by means of a sinking engine; I hope thus to put the mine down 40 fms., and erect the engine, a 40-in. cylinder, in four months.

FOREIGN MINES.

ANGLO-MEXICAN MINES.—*Guanaxuato, April* 3.—*Asuncion.*—

Week ending—	Memoria.	Sale.	Profit.	Loss.
March 4	$371 4 6	$812 0 0	$34 5 6	—
„ 11	377 6 1	1000 6 0	122 4 10	—
„ 18	703 1 6	716 0 0	—	$345 1 6
„ 25	392 2 0	1144 7 0	180 1 6	—
			$337 1 10	$345 1 6
		Less		337 1 10
		Total loss in the four weeks		$7 7 8

The rent receivable from San Augustin hacienda, under the new arrangement, is $1200 per annum.

BOLANOS MINES.—El Bote, *April* 3.—I had last the honour of addressing you, relative to the mining operations of this negociacion, on the 20th March, and I beg to acquaint you with the progress made since that period. In San Genaro shaft, the sinking has been carried on with all the activity we are able—having sunk 9 varas during the month, the ground being still favourable for sinking, and the water has not increased. Our progress also in Victoria cross-cut has been very favourable—14½ varas having been driven in the month. In the cross-cut de la Compania but little has been done, having struck on the 5th March (as I suppose) the south wall of the main lode, which let in such a quantity of water upon us, that we were immediately driven out, the water rising at the same time about 7 varas above the back of the cross-cut. This had a great effect upon the planes, and the water in two weeks lowered about a vara: but finding, after several days' trial, we were unable to sink the water in the shaft, so as to allow us to resume the working in the cross-cut, we concluded to pump the water out of the planes, which is now done, and the planes are nearly dry, the coming water being very little. We have now a fine chance for raising ore (provided we can master the water)—not by sinking the planes, but merely by working the high ground, both east and west, until we reach the level of its bottom. We last night commenced to make another trial with the four malacates, to see if it is possible to sink the water in the shaft, so as to allow us to enter the cross-cut, which I hope we shall be able to do, as the head of water we had against us is now considerably diminished, by having the planes dry. In Guadalupe east, our progress in driving has not been so good as I could wish, in consequence of the ground proving against us—9 varas only have been driven in the month. The vein continues very large, being much disordered, and poor, being a mixture of slate and barren quartz; and, what is still more strange to see, it is in complete colorados—being more than 200 varas below the surface. The level east from Pozo de Guia has been discontinued, the ground between this level and Guadalupe being worked by the barreteros, and there is little or nothing left worth driving the level for. A plane in the bottom of this level has been commenced, in which the vein is about 6 varas wide, and in very good ore. In the workings in the bottom of Guadalupe east, the vein is not altogether so good, and the ore from this point rather of a low ley. A level has been commenced in the eastern end of these workings, in order to get into a good bunch of ore we had in the bottom of Guadalupe level, about 15 varas to the east of the present workings, and which is now full of attle, in consequence of not having any other place to deposit the stuff coming from the level of Guadalupe. In the backs in the upper end of San Antonia, the vein has become poor, and but very little has been done in this part of the mine during the month. *Extract from a Letter dated April* 4.

My last letter was dated the 3d March; and I am sorry to inform you, that since then I have not received any letters from you. Part of the packet correspondence reached this city on the 21st March, but very few persons received letters. On the 5th March, at day-break, the miners in the Compania cross-cut were sent out by a rush of water which had been cut, and which soon rose 7 varas above the top of the cross-cut. I immediately determined to keep the four whims at work upon the water for some days, and see if we could master it. On the 8th we had three-fourths of a vara of the top of the cross-cut clear, but from thence we could not lower it. In the meantime, the water was daily going down slowly in the planes; but, after 10 days' work, finding that the water had only lowered about three-fourths of a vara in the planes, and that in this time no carga had been extracted, and considering, at the same time, that to lower the water entirely from the planes, at the rate we were then doing, it would take us more than two months, without being able to extract any carga, I determined upon stopping the drainage of the cross-cut, and get out all the carga which had been knocked down, and pump out the water from the planes; and, after having taken away this deposit of water, attack the cross-cut again with the four whims. This morning the planes are dry, I may say, as the coming stream is very little, and since the night of the 2d inst. the four whims are again at work at the drainage. I am in hopes, that in 8 or 10 days the whole of the water from the cross-cut will be out, so as to enable us to finish cutting the vein, and then there will be no fear of the water annoying us in the workings. As I shall in a few days again write to you, I will then inform you of the result. The extraction last month was principally made in taking the ground over the east end of Pozo de Guia, which yielded very good ores. In the eastern planes, the ores have fallen off considerably, both in quantity and quality: on this account the ley of the ores extracted has fallen off a little; but the average ley of those extracted at the latter end of the month reached 7·80 marks. In San Antonio, the ores are of so low a ley, that this point has been stopped.

East end of Guadalupe.—The vein in this point is in colerados. The ground has not been very good, and our progress in the month was not so good as that of February.

San Genaro Shaft.—Our progress in this point continues good, and if no impediment takes place, we shall, no doubt, reach the depth of 230 varas in the time mentioned to you in my last: 2½ varas were sunk last week, making the total depth on the 1st April, 198½ varas. The ground also continues favourable in the Victoria cross-cut, and 3½ varas were driven last week. *Extract from a Letter dated April* 3.

I have been disappointed in not receiving your dispatches by last packet, and am at a loss to account for the detention of the correspondence.

San Francisco de Paula Mine.—As advised in my last month's letter, I finally delivered over this mine to the owners on the 11th of March. A new company was immediately formed by them for carrying on the mine; and I have thus been enabled to induce them to purchase nearly the whole of the buildings, and other matters comprised in the inventory account, which is preferable to dismantling the buildings, and selling them to casual purchasers. They also received over a large quantity of stores, at the prices affixed to them in the store account. The remainder of the stock has been transferred to general stores account. There are still some ores in La Granja in process of reduction, the result of which being known, the account of this mine in the treasurer's books can be closed.

Celestina Mine.—The mine continues nearly the same as last month. The north end of Providencia has improved a little, but there is a considerable falling off, broken by the buscones, arising from the inferiority of that which is derived from the bottoms of the Refugio, and from an old winze on the Celestina vein.

Loreto Mine.—Of this mine I have nothing to add to the information continued in the mine report.—Quicksilver is now offered at $160 for cash, and at $165 with two months' credit. There is a considerable quantity in the market, and I anticipate a still further fall.

Bolanos Transport.—Since my last, I have contracted for the transport of the Guadalupe engine and pitwork for $8500, inclusive of taking to pieces, packing, &c.; the waggons and mules to be lent, and returned in the same condition, or of equal value; the money to be advanced in instalments, at my discretion, as the transport proceeds, and $2000 to remain unpaid until its completion, to cover any loss or injury, and to insure the fulfilment of the contract. Everything capable of being conveyed by mules is to be delivered in the Bote by the 10th of June—the remainder of the engine in Salitre by the 30th of June, and in the Bote by November. Thus everything will be out of the Bolanos barranca, and in Salitre, before the rainy season commences, and from thence be removed to the Bote during or after the rains. It cannot be done before, on account of the bad condition of cattle, and scarcity of pasture and forage. The heavy stores not appertaining to the engine will also remain at Salitre, till a favourable opportunity for bringing them to Tacatecus.

March 30.—Loreto Mine.—*Tutworks.*—The west end of San Juan had been driving throughout the month on hard greenstone, accompanied with quartz and a string of ore, containing a great deal of pyrites, about 4 in. wide, of good quality. About five pairs of men have been working, on an average, during the month; but the extraction has been less, on account of a falling off in the width of the ore, which, however, has rather improved in quality—it varies in different parts from 3 to 8 in. in width. The expenses of this mine have been reduced to the utmost; notwithstanding which, there is still a slight loss. This, however, will not increase, as we have the advantage for some time to come of throwing the attle into abandoned places underground, where no benefit can be derived from working, and avoiding the expense of "mantio," which at present will only be required half a day in the week for drawing out the ore.

Celestina Mine.—*Tutworks.*—During the last week of the month, the ground, in the north end of the Providencia level, has changed to very compact greenstone, with a small string of ore in the upper wall of the vein, about 4 in. in width, of good quality. The east end of the Providencia level, upon the Celestina vein, having been driven 20½ varas beyond the supposed point of junction, without having seen any appearance of the Mayorazgo vein, going off to the south, and the footwall not having been in all parts equally well-defined, some doubts exist whether the latter vein may have been passed unperceived; and, in consequence, a cross-cut was commenced from the end to the south to ascertain the fact, which will be effected in a few varas driving; as yet, we have driven 3¾ varas without meeting anything. About 23 pairs of men have been working, upon an average, during the month, in the backs and bottoms of the Refugio and Providencia levels; the extraction of ore has been about 45 cargas more than last month, from a greater number of workmen having been employed; but the ore in width and quality is about the same as reported last month. In the Celestina winze, the ore has improved a little in quantity and quality.

REAL DEL MONTE MINES.—*April* 10.—To that part of your letter, or of the paragraph, in which you state, that, pending the negotiation connected with the steam-engine, it is the wish of the directors that we should consider and advise them upon the course which it may be best ultimately to adopt, with reference to working the mines, for which the engine was intended, our reply must be, that we have no alternative but to pursue the same course as hitherto, trusting to improvement in the veins, now accessible to us above the water. We hope, however, that the results will not be so unfavourable as formerly; and we ground these hopes on the improved state of the Moran Mine, and on our determination, whilst we are acting, to work the haciendas to the full extent of their power, for reducing the lower classes of ore. We will also endeavour to supply the mines with all that is necessary for their effective working, and will do our best towards forming such a combination between the mines and haciendas as will enable them mutually to assist each other; and, further, that we shall do all in our power to encourage every thing connected with "faenas" and other outlays, not indispensable at the present moment.

Mines.—The driving of the Santa Teresa, or 216 vara level, west from Dolores diagonal shaft, was suspended on the 25th of last month; the destajeros are employed rising over the level, in order to communicate to the workings below the Santiago, or 191 vara level, 33 varas west of the shaft; when this work is completed, it will enable us to increase the raising of azogue ore. In the Santa Teresa, or 216 vara level, driving east from the above-mentioned shaft, the vein is 2 varas wide, with small branches of azogue ore, of low ley. In the Santa Teresa, or 216 vara level, driving east from San Pablo winze, the vein is 2 varas wide, with a small branch of good ore—the remainder composed of white quartz and large bunches of azogue, and has at present a very promising appearance. In the above-mentioned level, driving west from the winze, the ground is favourable, vein 1 vara wide, with a small branch of azogue ore of low ley. There are 16 barreteros employed, stoping east and west from San Pablo winze, above and below the Santiago, or 191 vara level; these labores are producing a small quantity of good ore, of both classes. There are four barreteros employed stoping, north from San Eduardo rise, over the Aviadero level, 150 varas north of the perpendicular shaft, on the Santa Brigida; the vein is half a vara wide, producing azogue and a little smelting ore.

Rosario.—In the San Pablo workings, 12 varas below the San Enrique, or bottom level, 85 varas east from shaft, on the south lode, the ore part of the vein is 1 vara wide, and has a very promising appearance; we propose to sink a winze in the centre of these workings about 12 varas deeper, and from thence drive east and west. This mine is now producing about 170 cargas of azogue ore per week; the average mine assay, 10½ marcs per monton.

Santa Ynez.—In the 53 vara level, driving north from San Vicente shaft, the vein is 2 varas wide, with bunches of azogue ore. In the adit level, driving north from San Vicente shaft, the lode is 2½ varas wide, producing good azogue: as this ore is extending north, I think it advisable to sink a new shaft to the north of La Carretera, and lay open more ground on this vein. You will observe, by former reports, that the raising of azogue ore from the Biscaina, Tapona, and the Santa Brigida vein, is very much fallen off during the last 12 months, and I see no view of increasing it to any great extent from those veins, without additional drainage power. The low ley ore from Santa Ynez vein can easily be increased, by employing more barreteros; but our present hacienda power—that is, Regla Sanchez, and the 500 cargas per week that will be required for San Miguel—is quite sufficient to reduce all the ore we can raise at present; should means be found of returning, at a profit, ores of from 5 to 6 mcs. per monton, we could raise very large quantities of ore of that class, and, perhaps, in addition to the above haciendas, keep at work San Antonio. The pitches over the adit level, 142 varas north from San Vicente shaft, are a little improved during the past month; the vein is from 4 to 5 varas wide, of azogue ore, assaying from 12 to 13 mcs. per monton. In the stopes over the 132 vara upper level, north and east of the shaft, the vein is 3 varas wide, of azogue ore; this mine is now producing about 400 cargas of azogue ore per week, assaying 12 mcs. per monton.

Acosta.—At San Pedro the water has become too powerful for our present means of drainage; the engines are being worked so fast as to cause frequent breakages and disorder in the pitwork. The San Enrique level has not been seen for four weeks past, and there is but little probability of seeing it for some time to come. The Aviadero, or 130 vara level, driving east from the Santa Brigida, on Acosta vein, has a very promising appearance, the lode is nearly 1 vara wide, the whole of which is azogue ore, and the ground much more favourable for driving than it has formerly been. The stope north of La Cruz winze, below the San Isidro level, is yielding azogue ore of a good quality. San Cayetano workings, below the Aviadero level, where barreteros are employed on partido, are not looking quite so well as described last month—consequently, the raising of smelting ore has a little fallen off. This and other places where these people are employed, are yielding a good quantity of azogue, besides a little smelting ore. The stope south of San Casme winze, over the San Patricio level, is yielding from 70 to 80 cargas of azogue ore per week, having a ley of about 10 marcs per monton.

El Sacramento.—The stope over the San Miguel level, 168 varas south of shaft, is looking well for azogue ore: here two destajeros, with two peones, raise about 50 cargas of ore per week. The workings north of Santa Barbara winze, above and below the 40 vara level, have a little improved; the ley of the azogue ore is higher, and quantity increased. The workings above and below the San Felipe level, 240 varas north of the shaft, con-

tinue to yield about 80 cargas of azogue ore per week, assaying about 10 mcs. per monton. The stopes north and south of San Ramualdo winze, over the San Isidro level, were yielding about 20 cargas of azogue ore per week, having a good ley. Being requested to give a statement of the quantity of low ley, and other ores that could be supplied from Acosta district, and within the present means of drainage, I beg to say, that, according to present appearances, and including ore of 5 mcs. per monton, with what we are now raising, 1000, or more, cargas per week could be supplied for some time; and, if proper levels should be extended south from Sacramento present workings, and explore the whole of that piece of ground between this place and the workings north of Dolores, now unexplored below the adit, 600 or 700 varas in length, there is a probability of keeping up a raising of the above quantity for years; but it must be borne in mind, that these ores are all of the quemazon, or gossan, nature, and are better adapted for the barrel, or tina beneficio, than for the patio. If ore of 5 mcs. per monton could be reduced with a profit, the company have in their means other places where quemazon ore of this class could be raised with comparatively small expense, and out of the way of drainage power, and in working it there is a probability of finding better.

Moran.—Here we have commenced cutting down the side of the hill, and clearing away for foundation of engine and boiler-houses, preparing for putting up one of the 30-inch cylinder engines we have here on Moran shaft, where the former engine stood; this work is progressing favourably, but having a large mass of the hill to cut down, that requires a great quantity of blasting, we have been delayed; and the engine now about to be erected being of a different description from the former that worked here, it requires a larger space; I, therefore, expect it will be nearly the middle of May before we shall be able to commence the buildings; every effort, however, will be made to forward this work, as the wet season is fast approaching. The Disengano, or 125 vara level, driving west from shaft, has a very promising appearance; the ground is favourable for driving, and lode about half a vara wide—the whole of which is smelting and azogue ore, of a tolerably good quality. This end at present is worth about $300 per vara in length; and were the metal of so good a quality as it was in the level above, it would be worth nearly twice the amount stated. This level, driving east from shaft, has also a promising appearance; the lode is about 2 ft. wide, with a little good metal, but the ground is very hard and troublesome. Dolores winze, sinking below the Esperanza level, about 36 varas west of shaft, is hard and unproductive; but the Disengano level has passed under this place in a good bunch of ore. Santa Barbara shaft, sinking below the Esperanza level, has a promising appearance; the lode is about 2 ft. wide, the whole of which is azogue ore of a good quality, and ground not very hard. The mine, in her present state, and without lets from the engine, will give about 60 cargas of smelting, and about 200 of azogue ores per week—the former having about an average ley of 7 marcs per carga, and the latter about 18 marcs per monton, according to the mine assays.

Aviadero.—The adit driving south from La Virgen shaft continues hard: six Mexican destajeros drive about three-fourths of a vara per week.

February—Expenditure	$58,479 0 0
Returns	44,371 0 0
Loss	$14,108 0 0

UNITED MEXICAN MINES.—*Guanaxuato, April 3.—Mine of Rayas.*—I have now the great gratification of informing you, that the point of Santo Toribio has continued steadily to improve, and presents a most favourable aspect. The works that have been carried on by Mr. Glennie, for the purpose of ventilating this point, have answered their purpose; an increased number of hands are now employed upon it, and more will be when attainable; but workmen are in request, and scarce. The expenses of the mine continue heavy, from the additional number of men employed, and also owing to the new works required, and recent purchases of iron for miners' bars, &c., which is very dear, but our prospects are remunerative. San Cayetano is gradually declining; but when some dry walls, which are now in course of construction, are built, some improvement may be expected in it. The water continues gradually to decrease, though slowly, as we are just now in a wide part of the mine, where the water extends itself. Annexed is the usual comparative monthly statement, by which you will see that the half sales have decreased. Enclosed is Mr. Glennie's report, dated the 1st inst.

Four weeks ending—	Picked Ores.	Half Sales.	Outlay.
February 26	Cgs. 3201	$4679 3 4	$22,415 7 5
March 25	3763	3935 4 4	25,475 7 0
Cargas..	562	$743 7 0	$3059 7 3
	Increase.	Decrease.	Increase.

Haciendas.—Barrera, as you have been already informed, is now entirely employed on the ores of the Mine of Rayas.

Dolores has commenced full employment upon the same; and I have given notice to the contractors for Duran, that his hacienda will also be required for the same purpose. Should we not be able to obtain a renewal of the hacienda of Barrera, it will probably be necessary to build one or more; but I shall wait the arrival of Mr. Shoolbred.

Quicksilver.—My purchase of this article, since my last, amounts to 50 bottles; and I am at this moment in treaty for 80 more, not yet arrived in Guanaxuato.

Remittances.—I am very anxious to see a conducta established again, to enable me to remit you $40,000 or $50,000 (in addition to the bill for $12,000 due in the city of Mexico, May 19, mentioned in my last dispatch), as now the haciendas will not require purchased ores, and more money here will not be necessary than sufficient to supply Rayas and the haciendas, and a certain sum to replace the hacienda we are likely to lose.—W. Heath.

Report of the State of the Workings of the Mine of Rayas.

April 1.—La Purisima.—A few cargas of common ore are still collected from the old workings on this side of the mine, in which the buscones are employed. These men, whilst pursuing their operations, deposit a portion of loose stuff in a point near the great shaft, whence it is extracted, and the ore dressers pick it over, and receive two-thirds of the azogues for their share, whilst the mine receives the other third of the azogues, and all the tierras. This is the system that has been pursued for a long time.

San Pio and Los Reyes.—The roof of San Pio continues to yield a small quantity of good ore. A dry wall that is being raised will facilitate a further extraction, although not to any great amount. The end San Antonio has reached the limit towards the north-west, in which the ores have hitherto invariably failed; it has, consequently, been suspended. The pillar of Los Reyes has been extracted (sufficient support having been given to the upper part of the lode): there is a small portion of ore above the head of this point, which is being carefully taken out. The produce from this part of the mine is gradually decreasing, and will soon come to an end. Five pairs of barmen are now employed by day, and seven by night.

San Cayetano.—The dry wall in the pit of San Pablo is advancing slowly, and will soon reach a point from which some good ores may be extracted. Two pairs of barmen are employed by day, in throwing down building stone.

Santa Cecilia.—Since last month's report, 3·79 varas have been driven in this cross-cut. No particular variation has been observed in the formation of the ground.

Santo Toribio.—Good ventilation having been secured, the number of barmen has been gradually increased from 39 pairs to 60 pairs by day, and 60 by night; and the produce has increased in proportion—the quantity of ores picked this week having reached 1000 cargas, of which 450 are of the first class, 250 of the second, and 300 of the third, besides a small stock on hand in the patio of undressed ores. The roof of the working contains ores in bands, crossing the whole extent of the same. The end to the north-west (Santa Margarita) becomes less productive as it advances—thus apparently showing, that the point at which the ore was first struck in July last, corresponds with the limits of the general mass on this side. The end to the south-east of the roof continues very productive; a slight change has taken place in the formation of the lode, which is now more compact than it was formerly. The pit in the end Santo Toribio has been communicated with the level of San Miguel, and the original end is being driven in fair ores, which improves as the work advances. In the end San Miguel, there is now a greater breadth of ore than has hitherto been met with, and, at the same time, it is of excellent quality. This is the point the most advanced to the south-east. In the entrance of the level a pit has been commenced on good ores, in continuation of the one that was communicated from the end of Santo Toribio. The original pit, from the bottom of which the end of Dolores was opened, is being carried down on good ores, which are found crossing in bands against the upper side of the lode, and bunches in the middle and lower part; the men that formerly worked in the end of Dolores have been removed to this pit, in consequence of its being the better point of the two. The assay of the ordinary earths from Santo Toribio is promising well, as, after having been ground, they are found to contain more than sufficient silver to cover reduction expenses, whilst a portion of gold is also met with. Where there is an abundance of gold, as is the case with the ores from this point, it is difficult to collect the whole of it in the arrastres—consequently, the silver of a torta, lately reduced, contains a small quantity of gold.

Exterior Works at San Miguel.—The new piece of "patio" is finished, with the exception of the paving immediately about the mouth of the shaft. The work on the side of the hill is advancing rapidly, and the wall will soon be commenced. The two whims at present existing are employed daily in the extraction of ore. In the great shaft, 6 whims always, and occasionally 7, are employed daily on the drainage, and 3 by night. The water has been lowered 3 varas in 4 weeks. The sales on joint account with buscones have fallen off. There is not a single point of interest, and many of the workmen have abandoned their poor "compas," and taken employment on the mine account in Santo Toribio.—G. R. Glennie.

IMPERIAL BRAZILIAN MINES.—*Gongo Soco, March 13.*—Messrs. Mackay, Miller, and Co., under date of the 1st inst., advises us, that on the following day they hoped to obtain possession of the pumps, and that a tropeiro was waiting to see them, and would probably take them, if they were not too unwieldy for him. As I hope there is no chance of their being so, I trust they are now on the way. I regret that I have no alteration in Gongo to communicate, except that we have washed the bed of the river until it is no longer worth continuing, and has, therefore, been abandoned for the present. At Bananal the continued drought has so diminished our surface water, that it is with difficulty we can keep the mine drained, so as to prosecute the new adit from the great sink; we, however, do so in both directions, as also downwards from Walker's shaft (where we still have considerable difficulty), and upward from the adit shaft. I am happy to say, the lower part of the adit has been opened, and, consequently, a single piece of it (certainly, a large one) remains to be penetrated, below Walker's shaft. Walker's shaft has, of late, become much more favourable for sinking than it has been, and is now going down rapidly. All our other works are going on well, except our tile-yard, our produce from which is not so good as we could have desired. We have no gold return.

Extract from the Agent's Letter, dated Rio de Janeiro, April 1.

We have, at last, started off some of the pump machinery, but only the lighter pieces; the heavy ones are still immoveable, but we have a prospect of getting a conveyance for them soon.

Gold working—from Gongo Soco, from 3d to 13th March, 6 lbs. 7 ozs. 10 dwts.

NATIONAL BRAZILIAN MINES.—*Cocaes, March 12.*—The lode here still continues downwards, at an angle of about 28° from the horizon, which is much greater than at any other place on this line, except at the Bandura stope, where its declination is much the same as the above-mentioned, and continued downwards from that point to several feet below the shallow adit level. At the place in question there are a great number of "smooth heads" and fissures, branching off from the footwall to the upper part of the layer, which occurred at the Bandura also; and just below it there was a very rich vein met with; therefore, judging from those indications, we may very shortly expect some better ground at the sink.

March 12, produce from Cocaes				Mrs.	7	2	7 20
,, 7, ,,	Cuiaba			Mrs.	4	4	7 53
,, 17, ,,	,,				3	7	4 31—8 4 4 12
Total				Mrs.	15	7	3 32

ST. JOHN DEL REY MINES.—*Morro Velho, March 9.*—Produce for February, 16,217 ozts.=755·795 lbs. troy, from 38,048 tons of ore, yielding 4·26 ozts. per ton.

This splendid produce is the largest the company have ever obtained in any one month, and it is rather difficult to account for so marked an increase over the preceding month; but it may be observed, that the West Cachoeira ore, which was particularly unfavourable in January, has been just as much the reverse this month—one of the stopes there having yielded the richest ore we have obtained from any part of the mine; besides which the abundant supply has enabled the reduction officer to reject near 700 tons of the inferior quality—nearly equal to 15 per cent. of the whole quantity raised. I fear, however, that we have no right to expect so favourable a result for the current month—the West Cachoeira showing strong indications of its returning to its quartrose nature; while in the west Quebra Pannella, one of the stopes is now penetrating a bar of killas, which will necessarily give a large preponderance of poor stone from that locality.

Cost for February, Rs. 27,538 483		£3326 16 6
Produce	16,217 ozts.	
Less dues, 7 per cent.	1,135 ,,	
	15,082 ozts., at 7s. 6d.	5656 5 0
Profit		£2329 8 6

This result will, I have no doubt, be highly satisfactory to the board, being the largest profit we have yet attained. I have already stated my reasons for fearing that the March produce will not be so good as that of February; but, on the other hand, the costs also will. I think, be lower, which will help to compensate for the falling off in the produce.

Gold Remittance—amounting, after paying the 5 per cent. duty, to 28,897 ozts., will start from hence on Tuesday, the 14th inst., under charge of Mr. Sandilands.

Western Exploration.—After pushing his cross-cut 8 fms. 4 ft., Capt. Treloar has succeeded in discovering what he is convinced is the true continuation of the lode, so long ago lost by Mr. Herring, in what was then called the Champion ground. The lode now discovered is 6 ft. 6 in. wide, and every bit of it fit for the spalling-floor, though, of course, not equal in point of quality to what it may be expected to be at a deeper horizon. The beneficial results of this discovery, for the future development of Morro Velho, cannot be too highly appreciated.

March 18.—Gold extracted to date, 5476 ozts., from 248¾ cubic feet of sand=22 ozts. per cubic foot, being the produce of the first 10 days' stamping. Stamps working 18 days, average 68 3-10ths heads. The supply of ore was sufficiently abundant during the first 10 days; and though for two or three days subsequently the supply fell off, owing to the stoppage of one of the shafts, in consequence of the stope passing through it, we are now all right again, and the rejection of inferior ores goes on with spirit. The produce of the first 10 days' stamping is extremely good, but I expect a serious falling off in the produce of the second period of 10 days; because, on the one hand, we have no longer the benefit of the rich lode in the West Cachoeira (alluded to in my letter of the 9th inst.), while, on the other, the quantity of killas sent up from the mine, particularly on the 11th and 13th, was quite distressing. The stone now coming up, however, is again very good; and it is to be hoped that the third division of the month will help to compensate for the expected falling off in the second. Having been very anxious to ascertain the real value of the rich lode above spoken of, in the West Cachoeira, the reduction officer has had 140 8-10ths tons of it separately stamped, separately amalgamated, and separately burnt off, from which it has been ascertained that the 140 8-10ths tons have produced 855 ozts. of gold=6·07 ozts. per ton of ore. And as that lode furnished 350 to 360 tons to the February stamping, that circumstance sufficiently accounts for 700 to 800 ozts. of the extraordinary produce of last month.

Weather and Surface Works.—With the exception of the heavy fall of rain in the early part of January, the whole of the month of February and of March, up to the present moment, has presented the extraordinary appearance of perfectly dry weather, at a period of the year when, according to all former precedent, we should have been deluged with wet. This unprecedented circumstance, while it is exceedingly injurious to the sanatary condition of the establishment, and will affect us in a pecuniary way by the enhanced prices of provisions, has, on the other hand, afforded us the opportunity (of which we have not failed to avail) of pushing our surface works with vigour, at a period when we had naturally expected to be doomed to comparative inaction: more particularly the new stamps, and the new hospital, are being pushed with the greatest spirit. The total force (including European mechanics) employed on the former work amounts to 83, on the latter to 49. We are also progressing, though more slowly, with the new works for the amalgamation-house and the new tan-pit.

MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

Ashbueton United Mines.—These mines are situate at the south-western portion of the Dartmoor granite range, at its junction with the killas, about eight miles from Newton Abbott and the South Devon Railway, where materials and ore can be easily transmitted either by that road or shipped at Teignmouth. They have been known since the reign of Elizabeth for the superior quality of their tin ore. The last company, chiefly Manchester gentlemen, raised, within a short period, 60,000*l.* worth of tin. They erected on the mines considerable machinery for water-power, of which we have now the benefit. To this machinery we have fixed a new pump of much greater power, and are now on the point of seeing the lowest levels in the mine, from whence the last company were raising ore when they were involved in that celebrated law suit which put a stop to their proceedings; this law suit was incurred from their misconception of the Stannary laws, which led them to undertake the gigantic attempt to bring, by a long and circuitous route, the Dart river to flow over their wheels, so as to enable them to sink deeper. The consequence of the law suit was the sale of the mines, and the present adventurers have commenced their operations by a renewal of the leases for 21 years, and 1-20th dues for all minerals. The present company have expended upwards of 4000*l.* in repairs of machinery, erecting calcining-houses, and explorations underground, the result of which is the discovery of several very important metalliferous deposits; in one spot alone, a vein, close to the present working shaft, has been opened to an extent wherein we can already estimate, at the lowest, 300 tons of black oxide of copper, containing from analysis, 36 per cent. of pure copper; this will be available in the course of a month or six weeks, at the rate of 20 tons per month, or so, amply covering the present cost. The geological position of the mines is most favourable, being at the junction of the two strata, and largely intersected by volcanic rocks, the primest indicators of metallic deposits. The extent of the property is about one mile square, which we may divide into two parts for mining purposes—the northern is where the extensive workings have been made on four lodes, which, with our improved pumping power, we expect to renew in depth. We are raising tin here from shallow workings with a good prospect of an increase, having cut a branch left untouched by the former miners, besides the rich copper branch before-mentioned, which is likely to continue downwards as we sink deeper. The present depth of the shaft is 73 fms. from the surface, and 55 fms. below adit, and we expect our present power will take us 30 or 40 fms. deeper, through the rich shoot of tin that has realised so much to the old adventurers. In the second, or southern portion of the mines, there are four distinct lodes of large dimensions untouched, except at the surface, and only so far as they could be excavated without the aid of machinery. We have lately cut the first of them at a depth of 20 fms., by a cross-cut from our adit level. We have only discovered it in the volcanic rock, and are now driving to ascertain its exact position in the regular strata (the killas). The appearances lead us to expect most valuable results, metallic copper being diffused in thin laminæ through all the strata for many fathoms round, and a large course of quartz, upwards of 9 ft. in breadth, impregnated with mundic, copper, and other minerals, leading onwards to results that may be determined in a few weeks.

Gurtavallig Mine.—The following communication has been received by the chairman of the Southern and Western Mining Company of Ireland, from Capt. W. Thomas, dated May 13:—"The *William and Thomas* arrived here yesterday morning when we commenced discharging her ballast, and by 10 o'clock this morning, we had put on board 88 tons of ore. I should suppose, that the fact of our having shipped a cargo of ore in a few hours, besides discharging 30 tons of ballast, will, or ought to, convince the most sceptical, that we have not only a mine, but the means of shipping the ore as speedily as if it had been on the quay of Cork. I have forwarded by this post the bill of lading, and enclose the master's receipt. If the cargo is to be insured, I think the amount should be for 600*l.*, because the price is at least 2*l.* 10s. per ton below what it was 12 months since. We must, however, be satisfied with the time's price, although it is unfavourable at the commencement of the mine."

Wheal Louisa.—In the eastern end of the 30 fm. level, in driving towards the cross-course in the hill, a great improvement has taken place.

[From the *Plymouth Journal.*]

Plymouth Wheal Yeoland.—The lode has been cut in the 20 fm. level—as yet only 2½ ft. have been seen. The lode is regular, evidently large and hollow, from the large quantity of water let down; the lode is very rich. At present there is no indication of the south wall of the lode. The last parcel of ore (7 tons) produced 280*l.* Another parcel is nearly ready for the market. The new south lode has passed through the slide, and is now regular and rich.

Wheal Franco.—The lode in the 47 fm. level east gradually improves. The capels of the lode in the 62 fm. level have not been cut through; but there have been met with during the last week several good strings of ore, dropping towards the lode.

Wheal Calstock.—In this mine there is nothing new; the shaft being in the country.

East Crowndale.—The bottom part of this mine is slightly improved; the other parts are unaltered.

Wheal Ash.—Nothing has been done in the shaft for the last week, owing to the failure of the top water, which has been insufficient to drive the wheel. The shaft is 15 fms. under the adit, and the part of the lode seen at the last drawing was upwards of 5 ft. wide—solid mundic, with spots of spar and ore. There is no indication of the south wall. The men lately employed in the shaft are now driving east on the course of the lode in the adit level, where they have a lode of mundic, spar, and gossan, about 4 ft. wide.

Prevention of Collisions on Railway Sidings.—It is to lay across the rails, at both ends of a bye or siding, a beam of elm or other wood, fastened down at one extremity by a staple hinge, and at the other padlocked down to an eye bolt. This Scotch plan would prevent the possibility of porters shifting trucks, and fouling the main line, without previously applying to the station-keeper for the key; who, of course, would report the application to the policeman on duty. The slight increase of trouble occasioned by this plan would be of no moment to the officers of any railway, who have ever evinced anxiety to protect the public from danger.

The Gutta Percha Trade.—It appears by the last accounts from Singapore, that the Chamber of Commerce of that settlement have found it necessary to request the interference of the authorities against an attempt, on the part of the native rulers of the neighbouring kingdom of Johore, to monopolise the trade of gutta percha, the growing importance of which has attracted their cupidity. The gutta-percha trade is represented to amount to between 10,000 to 12,000 piculs, valued at from $150,000 to $200,000 per annum; and it is believed that, by intercepting the boats from the various districts where the article is collected, and compelling the owners to surrender it at some arbitrary price, together with other forcible and unjust measures, the parties complained of have succeeded in causing 9-10ths of the quantity sent to Singapore to pass through their hands. Some pains seem to have been taken to collect evidence of these proceedings, which would obviously to a great extent interfere with the prosperity of the traffic; and, as the Sultan and chiefs of Johore are bound, under the agreement by which the East India Company became possessed of Singapore, to maintain an unshackled trade everywhere within their dominions, and to admit British commerce to all the ports and harbours of their territory, it is urged that no time should be lost in calling them to account, and in checking the encroachment which has been practised.

CWM ERFIN MINING COMPANY.

At a quarterly meeting of adventurers, held at the offices, George-yard, Lombard-street, on Thursday, the 18th inst.,—Mr. T. P. Thomas in the chair,—the accounts were examined and passed, showing—cash expended in machinery, 300*l.*; cost for January, 43*l.* 15s. 2d.; Feb., 54*l.* 19s. 8d.; March, 92*l.* 18s. 10d.—together 491*l.* 13s. 8d. By calls, 500*l.*—leaving balance in favour of the mine of 8*l.* 6s. 4d. A call of 10s. was made, payable immediately.—The following report was read:—

Cwm Erfin Mine, May 15.—The shaft is down 4 fms. 3 ft.—it was down 1 fm. 2 ft. when the men commenced sinking, so that they have sunk for the month 3 fms. 1 ft. I hope the shaft will be down in two months, in order to drive the 20 fm. level east and west, to meet the bunches of ore gone down from the 10 fm. level. The east end is poor at present; the men have driven 3 fms. 5 ft. for the month. I hope by the end of another month to get in ore ground, as the old men sunk and stoped in the level as far as they could go for water: they worked away all the ground above the level, so I have a good opinion of the east end, where it comes in that run of ground. The stope west of whim shaft is looking much better than last reported, worth 10 cwts. of ore to the fathom—the men have stoped 9 fms. 3 ft. of ground these last two months. The stope east of whim shaft is looking very well, worth 1 ton of ore to the fathom—this stope is 8 fms. in length, and likely to continue to lengthen. The men have stoped 11 fms. 3 ft. during the last two months. The stope west of eastern shaft is worth 7 cwts. of ore to the fathom. I think this stope will improve, on account of the stope to the west lengthening east towards this stope. The men have stoped 5 fms. 3 in. this month. In the bottom of the level under the stope we stoped 20 fms. of ground in length, and 1 ft. 6 in. in depth—it will make 5 fms. of ground. That was done from the 11th March to the 8th of April. We are about to prepare to sink the engine-shaft. I think we shall have good prospects, as we never saw the bottom of this shaft. It was worked by the old men with hand-pumps. I do not think they went down much under the 10 fm. level, for we have the bottom 4 fms. west of the engine, with some good ore in the lode.—N.B. I think we have 16 tons of lead ore at surface at present.

EAST TAMAR CONSOLS MINING COMPANY.

The first general meeting of shareholders was held on Tuesday, the 23d inst., at the offices of Messrs. Coode, Browne, and Co., Bedford-row, in accordance with the notice convening the same.

John Browne, Esq., in the chair.

The Chairman opened the proceedings, by explaining in a satisfactory manner, the purchase of the mine from the former company, the deeds of conveyance, &c., which were completed and laid on the table. He stated, that the representations held out for the formation of the present company had been fully borne out by the discoveries which have subsequently been made; and as their manager (Mr. Wolferstan) was present, he would readily inform the meeting the result of the six weeks' operations, and reply to any questions that might be put to him. It was the intention of the present company, to carry on the mine on the Cost-book System, to have an unpaid committee of management, and a secretary in London who would keep the books, so that the affairs and accounts of the company would be at all times open to the inspection and information of the shareholders; and for the purpose of affording a more ready and general satisfaction to the country, or local shareholders, a duplicate copy of the books would be kept on the mine for their inspection. He (the chairman) observed, that with regard to the financial affairs, the 9000 shares had been allotted, the money paid, and the purchase from the former company fully completed. The first month's working cost would be shown by Mr. Wolferstan, amounting to 174*l.*, against which they had 20 tons of lead for sale, offers for which would be received in a few days. He further remarked, that from their present gratifying prospects, he did not anticipate that any call would be required, and that the sale of a useless engine would give them ample working capital.

Mr. Wolferstan furnished a satisfactory explanation of what had been done upon the mine, and fully corroborated the opinion of the chairman, as to the probability of ultimate returns. He further stated, that during the first month they raised 20 tons of lead, at which, estimated at a low calculation of 11*l.* 10s. per ton, would bring 230*l.*—whereas, the expenditure during the same period amounted to 174*l.*, which included an extra charge of about 25*l.* for clearing up, dressing floors, getting the engine to work, and other expenses.

In answer to questions from some shareholders, Mr. Wolferstan considered that, during the first month's working, they had opened full 140 fms. more ore ground than they had taken away. The second month's working would leave a profit, as also the third, including the sinking of the sump shaft; and, as they progressed, and opened ore ground, there remained no doubt of having a very profitable mine. He (Mr. Wolferstan) produced some fine specimens of lead, broken in the 62 fm. level; the ends of which were yielding 12 cwts. to the fathom; and that the lode in the bottom levels were more productive than in any part of the mine yet seen.

A general conversation followed the above observations, and numerous inquiries made, which being responded to by Mr. Wolferstan with his usual urbanity and straightforwardness, gave manifest satisfaction to the shareholders present.

A series of resolutions were unanimously adopted, and the rules and regulations by which the company is to be governed having been read, the thanks of the meeting were passed to the chairman, for his exertions in the affairs of the company.

GREAT MICHELL CONSOLS MINING COMPANY.

A general meeting of shareholders in this company was held at the offices, 50, Threadneedle-street, on Tuesday, the 23d instant.

W. A. Thomas, Esq., in the chair.

The minutes of the last meeting, and the captain's report, having been read and adopted, the following resolutions were passed unanimously:—That Mr. Kieckhoefer's appointment, as secretary, be confirmed; his duties having commenced from the resignation of the late secretary in February last.—That a call of 5s. per share be made, payable on or before the 4th of June next, to meet the outstanding liabilities, and prosecute the future workings of the mine.—That the committee of management be authorised to take such measures for the collection of arrears of calls, amounting to 362*l.* 0s. 8d., whether by legal measures, or by compromise, by the surrender of such a competent number of shares as they may think adequate, or otherwise, as may seem to them best.

Great Michell Consols, May 20.—I beg to submit the few following brief remarks, showing the operations since the meeting of the 30th of August last, as also the present prospects of this concern:—The sump-winze has been sunk below the 35 fm. level 10 fms. 1 ft. 6 in., the lode being very large throughout, although but part of it has been carried; yet it has been opened into in places full 7 ft., and at different points was found productive, having turned out, in course of sinking, upwards of 100*l.* worth of ore. A 45 fm. level has been commenced, in an east, as well as a west, direction, for the purpose of proving the ground gone through in the sump-winze and 35 fm. level therefrom—part of the lode is only at present being driven on, for about 3 ft. in width, containing an abundance of mundic, fluor, ore, and spar, having every appearance of an improvement at no very distant period. The 35 fm. level has been extended about 22 fms. to the west of the sump-winze: in the course of this driving some tolerably good tribute ground has been discovered; the part of the lode now being carried in the present end of the driving is about 2½ ft. wide, containing mundic, ore, capel, and spar, and is, in its general character, exceedingly promising. There has been already broken, from the back of this level, about 180*l.* worth of ore—one pitch is working here at 10s. in 1*l.* From the ground laid open in the back, as well as the bottom of this level, we may expect, in the 45, and deeper points, not yet brought into operation, very favourable results.

We have discovered in this 35, west of the sump winze, three small cross-courses, which may be considered an important feature, not only as to its materially softening the ground, but that of improving the lode. The 35 fm. level, east and west of the engine-shaft, has been driven 4 fms. 2 ft. 1 in., making the whole driving 10 fms. 2 ft. 1 in., in hard ground, the lode being 6½ feet wide, producing at different points of the level good stones of rich yellow ore; but, in consequence of the slow progress to be made, it was thought advisable that operations had better be confined to the sinking of the sump winze, and opened ground therefrom, where it has been found, and still continues to be more favourable and easier of progress. The large and powerful water-wheel, with the machinery in connection therewith, is all in good working order, and capable of drawing the mine to a great depth below the present bottom, which considerably lightens the monthly cost, compared to many mines that have to be worked by steam-power. The ore broken from the sump winze, in the 35 fm. level, and pitches, may be estimated at about 500*l.* In conclusion, allow me to say, that with a little more outlay and perseverance, I have every reason to believe that we shall have a good and lasting mine.

WHEAL TRELAWNY MINING COMPANY.

A general meeting of shareholders was held at the Fountain Inn, Liskeard, on Tuesday last, the 23d inst.—Capt. Bryant in the chair.—The accounts for January and February were presented, showing—By sale of lead ores, 83 tons, at 14*l.* 8s., 1195*l.* 4s.; 80 tons, at 13*l.* 18s. 6d., 1114*l.*; by Wheal Trehane adventurers, for use of engine and for dressing ores, 33*l.*—2342*l.* 4s. 0d.—To mine cost, 2145*l.* 4s. 7d.—showing profit of 196*l.* 19s. 5d.; add previous balance of 663*l.* 19s. 10d., leaves now in hand, 862*l.* 19s. 3d.—The accounts having been examined and passed, the following report was read:—

Wheal Trelawny Mine, May 23.—Phillips's shaft is sunk below the 62 fm. level 2 fms., where the ground is favourable; and I expect to see the lode in the 72 fathom level in five months from this time. The lode in the 62 fm. level north is 18 in. wide, composed of can, spar, and lead, worth 7*l.* per fm.; in this level south the lode is 2½ ft. wide, composed principally of mundic, with can, spar, and lead, worth 6*l.* per fm. The lode in the 52 fm. level north is large, and worth 8*l.* per fm.; in this level south the lode is not so large as when last reported on, but improved for lead, worth 9*l.* per fm.; the lode in the winze, sinking below this level, north of the shaft, is worth 28*l.* per fm.; the stopes, in the back of this level, are producing a fair quantity of ore. The lode in the 45 fm. level north is not so hard as it has been, and worth 10*l.* per fm.; the stopes in the back are yielding a moderate quantity of lead. In stoping the back of the 52, we have no material change. Trelawny's shaft is sunk 13½ fms. below the 45, where we have commenced cutting a tip-plat, and driving towards the lode to hole to the 52 level north of Phillips's shaft; I expect it will take about two months to get to the lode. The 52 cross-cut east is still being driven by four men, without any particular change. At Vivian's we have driven the 30 fm. level on the course of the lode about 60 fms., 50 fms. of which are now standing, where the lode is worth, on an average, about 5*l.* per fm., and can be taken away for less than 20s. per fm. In consequence of foul air, in rising against Smith's shaft, the men have not spent more than 3 ft. of ground during the last week—therefore we have bored 3 fms., and holed to the rise. We shall now cut down the shaft, and be in order for drawing from the 30 fm. level about the middle of next week, which will be seven weeks from its commencement. In conclusion, I would beg to remark that, from the ground we have now laid open, we might increase our returns, but as the price of metal is so low, I would advise not to sell more than just enough to meet the monthly expenditure, particularly as we must look forward to the erection of an engine on the northern part of the sett.

John Bryant.

WHEAL CURTIS MINING COMPANY.

A special general meeting was held at the offices of the company, Basinghall-chambers, Basinghall-street, on Thursday, the 25th inst., to determine on the creation of preference shares, or taking such course as might be deemed advisable to meet the claims on the company, and to carry on or resume the operations of the mine, or otherwise.

RICHARD HALLETT, Esq., in the chair.

The notice convening the meeting having been read by the SECRETARY, the report of the directors was then read, which briefly stated, that they had felt it their duty to call the adventurers together—having suspended all operations, and reduced all costs at the mine. It appeared, from the report presented by the directors, that at the meeting held on the 5th January last, the accounts had been made up to the 7th December, 1847, when the liabilities amounted to 3000*l.*, a large portion of which was for supplies of materials furnished antecedent to May, 1847. At that time there was then due on account of calls 3759*l.* 5s. 10d., of which there had been received 1781*l.* 4s. 5d.—thus leaving 1978*l.* 5s. 5d. in arrear. In consequence of money being required for the mine, the directors had advanced from their private funds the money necessary for the workings. The results, however, had proved unsatisfactory; and it was with regret the directors had felt called upon to convene the present meeting. The defalcation of the projector of the company, on account of shares held by himself and family (1700 in number) was 2130*l.*, which would in itself more than cover the liabilities of the company. The directors had given instructions, that all the workings should be stopped, and no further expenses incurred, save the London establishment, which was confined to the rent of office and the salary of the secretary—they (the directors) having disclaimed any remuneration for their services from the 1st inst.

It appeared, from the explanations afforded by the CHAIRMAN, in answer to inquiries touching on the report, that the number of shares of which the company was constituted was 3600, in addition to which were 1440 bonus shares—making the entire number 5040. That there was due on calls made—first call, 9*l.*; second call, first instalment. 414*l.*; second instalment, 1041*l.*; and on the third call, of 10s. per share, due on the 10th inst., 2191*l.*, there having been paid only 306*l.*, on account thereof; the total amount of calls due, was, therefore, 3740*l.*; but, inasmuch that there was no reason to believe 2130*l.* would be recovered, from the inability of the parties, it was evident that, assuming all the arrears of calls to be paid up, only 1600*l.* would be obtained—hence the necessity of immediate steps being taken.

It is not our intention to follow the observations of the several adventurers who took part in the proceedings—for, although there was much interest manifested, and time consumed, the result may be told in a few words. Resolutions were passed to the effect, that the directors be authorised to take the necessary measures for the forfeiture of all shares on which there may be calls in default, or proceeding for the recovery of the arrears of calls; and that a recommendation be given to parties to pay up the amounts due on shares held by them, so as to meet the costs and liabilities which had been incurred—it appearing, from the representations made by the chairman, that, unless an immediate remittance be made in payment of labour cost (some 200*l.* or 300*l.*), there was no doubt that an order would be obtained for the sale of the engine and materials from the Vice-Warden of the Stannary Courts, to meet the claims.

The meeting separated with the understanding that the calls should be enforced, so far as was practicable, and that measures should be taken for liquidating the present claims on the company, the meeting being adjourned to the 23d of June proximo.

GREAT ROUGH TOR CONSOLS.—At a meeting of adventurers, held at the offices, Threadneedle-street, on Thursday last, the accounts were examined and passed—showing labour cost for April, 255*l.* 3s. 6d.; castings, 30*l.*; May and June estimated, 500*l.*=785*l.* 3s. 6d. It was resolved, that 15 shares, on which 4 calls, were unpaid, be declared forfeited, and vested in the name of the purser, subject to the further directions of the general meetings.—The purser reported that he had been in communication with the other shareholders who were in arrear of calls, amounting to 244*l.*, and that he had received a portion of them this day, and that the remainder was promised to be forthcoming before the next meeting. A letter, dated the 23d inst., from Capt. Joel Hitchens, was read, in which he stated that they "had again, that day, found some stones, with large spots of ore in them, from each of the shafts; and that stronger indications are not often seen, considering they are a considerable distance from the lode. The calculated distance to cut the lode in the 30 fm. level is from 12 to 13 fms., probably two months' work."

ACCIDENTS.

United Mines.—Hercules Bice, and one of his sons, who were working in the western part of United Mines, being finished, went to see how two other sons, who were working in a different part of the mine, were getting on. Whilst at this place a stull gave way, and a large quantity of attle fell, and buried the father and one son. The two other sons immediately set to work, and extricated their father and brother, when the latter was found but slightly injured; but the father was so seriously hurt that, although he received every attention from four medical gentlemen, he died.

Wheal Owles.—J. Pearce fell down the shaft, and was killed.

Brierley Hill.—A miner, named Holt, was dreadfully mangled by an accident at Messrs. Plant's colliery, Holly Hall.

Shocking Accident—Successful Operation under the Influence of Chloroform.—On Tuesday last a very serious accident occurred at the Brierley Works, to a puddler, named Charles Gretton, in consequence of which the man has been compelled to have a leg amputated. It appears he was assisting the "shinglers" to drive some wedges into the arms of the wheel, upon which the large forge-hammer turns, when one of the props gave way, and the wheel and hammer fell upon his leg, which was between the two, and lacerated it in the most dreadful manner from the ankle to the knee, and crushed the bones of the leg to atoms beneath the ponderous weight. The man was immediately removed to his residence at Brettell Lane, where he was promptly attended by Mr. Kempson, who administered stimulants to prevent fatal consequences, which at first were feared, from the almost entire exhaustion of the patient from loss of blood and the agony he suffered. In about three hours, Gretton was placed under the influence of chloroform, and in the presence of Messrs. Betts and Wilson, surgeons, and Messrs. Chapman, Russell, and Proctor, assistants, Mr. Kempson amputated the limb above the knee, in the most successful manner—the patient being in so perfect a state of insensibility that it was with some difficulty he could be convinced, on his restoration, that the operation had been performed. We are happy to add that he is now going on favourably.—*Birmingham Journal.*

Dowlais.—David Jones, forge carpenter, put his left foot on the nut of the spindle, on Monday evening, to turn the water over the rolls, and the crab was thrown in by mistake, which drew his leg into the spindle, so that he was smashed into pieces, and his remains carried home to his wife and five children in a bag.

A man of the name of Edward Davis, working in the Dowlais Collieries, had his leg broken in two places on Tuesday last, by a fall of coal upon him.

OPENING OF THE GREAT NORTHERN RAILWAY, NEAR DONCASTER.—A few weeks ago, the *Doncaster Chronicle* informed their readers, that the portion of the Great Northern Railway from Reedholme, near Askern, to Stockbridge, near Doncaster, would be ready for opening on the 1st of June. We are happy to say, that the works are now all but completed. The junction with the Askern branch of the Wakefield, Pontefract, and Goole Railway, is thus accomplished; and this latter line being ready, it is expected that the Government Inspector will go over the two lines on Monday next. Should he certify in time, as is expected, the new lines will be opened on Thursday next, the 1st of June. The permanent bridge over the Tilts-drain is an excellent piece of workmanship, there being no less than 92 piles driven down. During the past week, upwards of 113 horses have been employed every day in drawing materials and ballast on the line north of Doncaster. The permanent rails are laid as far as Bentley Approach, and they could have been completed as far as the Dun Drainage embankment had it been necessary. There will be four trains a day on the new line, which, until the opening of the remaining portion to Doncaster, will be worked by the Lancashire and Yorkshire Company. The line from Stockbridge to Doncaster is to be completed by the 21st of August next. On the south side of Doncaster the line is progressing favourably. With regard to the Lincolnshire Deviation of the Great Northern nothing at present is decided, but it is intended to complete the main line between Doncaster and Retford *viâ* Bawtry, by the time that the Sheffield and Lincolnshire (from Gainsborough to Sheffield *viâ* Retford) is ready. This is expected to be about November next. By this means, a communication will be opened from Doncaster into Lincolnshire, and in a short time afterwards to London *viâ* Peterborough.

SAMBRE AND MEUSE RAILWAY.—The *Morning Chronicle*, in its City Article, of Tuesday last, states that the works of the Sambre and Meuse Railway are suspended until more favourable times. We are enabled to state positively that such is not the case. The works are proceeding as usual; the difficulties in the tunnels are overcome, and the first 25 miles of the line may be opened in the course of the summer. For the finishing of the second part, ample time has been given by Government—viz.: to the end of 1851, and an additional delay of two years for the branch. The law passed the Chamber of Deputies on Saturday last, without a dissentient voice. This should satisfy shareholders of the good faith of the Belgian Government. It affords a favourable contrast to what is passing elsewhere.

The contract (says the *Ayr Observer*) some time ago, entered into between the directors of the Glasgow and Ayr, with which the Glasgow and Belfast is now amalgamated, for erecting a bridge across the water of Ayr, is immediately to be put in execution. The Ayr and Dalmellington joins the line a few miles out of Ayr; and, in two or three years, the Glasgow and Belfast will be completed as far as the junction of these two lines. The Dalmellington Iron-Works are nearly finished, and a large amount of traffic is anticipated.

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Bate's West Hartley 13 9—Davison's West Hartley 14—Hasting's Hartley 14—New Tanfield 12 6—North Percy Hartley 13 9—Ord's Redheugh 13—Richardson's Hartley 13—Ravensworth's Pelaw 12 9—South Pearth 13—Tanfield Moor 13—Tanfield Moor Bute's 12 6—Townley 13—Walker's Primrose 12 6—West Wylam 13—West Hartley 14—Wall's End Acorn Close 13 6—Bewicke and Co. 13 9—Brown's Gas 12 6—Bensham 13 6—Framwellgate 13 6—Gosforth 13 9—Gibson 13 6—Hedley 13 9—Harton 13 6—Hilda 13 3—Riddell's 13 6—Wharncliffe 13 9—Eden Main 14 to 14 6—Lambton Primrose 14—Belmont 14 9—Braddyll's Hetton 13 3—Bell 14 3—East Hetton 13 6—Haswell 16 3—Hetton 16—Keepier 15 6—Lambton 15 6—Russell's Hetton 15 9—Cassep 14 3—Hartlepool 16—Hudson's Hartlepool 14 3—Kellce 14 3—Thornley 14—Tees 16—West Hetton 14—Cameron's Coalbrook Steam 19—Gwaun Cae Gurwin Stone 25—Howard's West Hartley Netherton 14—Rainton Coke 18—Sidney's Hartley 14.—Ships at market, 140.

WEDNESDAY.—Bate's West Hartley 13 6—Buddle's West Hartley 13 9—Chester Main 13—Davison's West Hartley 14—Hasting's Hartley 14—Holywell Main 14—New Tanfield 12 6—North Percy Hartley 13 6—Richardson's Hartley 12 6—Ravensworth Pelaw 12 6—Tanfield Moor 13—Tanfield Moor Bute's 12 6—Walker's Primrose 12—West Wylam 13—West Hartley 14—Wall's End Bewicke and Co. 14—Brown's Gas 13—Bensham 12—Gosforth 14—Killingworth 14—Eden Main 14 6—Belmont 15—Braddyll's Hetton 15 9—Bell 14 9—Haswell 16 6 to 16 9—Hetton 16 6—Lambton 16—Russell's Hetton 16 3—West Hetton 14—Cowpen Hartley 14—Derwentwater Hartley 13 9—Howard's West Hartley Netherton 14—Hartley 13 6—Sidney's Hartley 14.—Ships, 177; sold 82.

FRIDAY.—Chester Main 13 3—Davison's West Hartley 14—Hasting's Hartley 14—Holywell Main 14 3—New Tanfield 12 6—North Percy Hartley 13 6—Ord's Redheugh 13—Richardson's Hartley 12 6—Ravensworth's Pelaw 12—Tanfield Moor 13—Townley 13—Walker's Primrose 13—Wylam 13 6—West Hartley 14—Wall's End Brown's Gas 12—Bensham 12 3—Framwellgate 13 6—Hedley 13 9—Killingworth 14—Eden Main 15—Lambton Primrose 14 6—Belmont 15—Bell 14 9—Hetton 17—Lambton 16 3—Russell's Hetton 16 6—Hudson's Hartlepool 14 6—Kellce 15—Seymour Tees 14 9—Tees 16 6—West Hetton 14—West Cornforth 13 6—Cowpen Hartley 14—Derwentwater Hartley 13 9—West Hartley Netherton 14—Hartley 14—Rainton Coke 17.—Ships at market, 130.

LEAD MINING IN CARDIGANSHIRE.

SIR,—In your Journal of May 6th, I read some observations on lead mines, by one of your correspondents. I have waited hitherto with the hope, that some one, more able than myself, would have replied to them, and have shown the public that the statements of "Lead Miner" are dictated by a wish, either to monopolise all Cardiganshire to himself, or to gratify private pique and ill-will—by injuring at one full swoop, from the proprietor to the labourer, the whole of its inhabitants. Your correspondent, in order to convey to the reader some notion of his extensive knowledge, starts with a bit of a flourish about things in general, and, in particular, about Wheal Rose in Cornwall, Combmartin in Devonshire, Crich Cliff in Derbyshire, and other matters—all well enough in their places, but which, in the present instance, are merely employed as a peg to hold up a list of some mines in Cardiganshire—ostensibly for the purpose of preventing deluded and suffering individuals, in whom the possession of money creates a turn for speculation, from burning their fingers in that abused county. I can fancy this "Lead Miner," with his one-sided, and, therefore, self-interested, statement—philanthropically telling somebody, who may be about putting on a Welsh mine, "Let me advise you to keep your money, my dear fellow; it is no use, you will never get an honest livelihood here; you had better go to Australia, that is your only place"—like the old mouse, who, with tears in her eyes, told her astonished progeny, "That the cares and troubles of the world had so oppressed her, that she had determined to shut herself up for the rest of her life in a small recess, which she had with much labour excavated, for the protecting and secluded asylum of her declining days: as for her hearers, she besought them to disperse and seek their fortunes in more prosperous places; but, above all (it was her last request), that they should on no account return, and by their presence disturb the rigid sanctity of her retirement." Notwithstanding her self denial, it was afterwards found that she had accidentally discovered an enormous Cheshire cheese, and that the holy cell which her resignation aimed at was a neat chamber, which she had made for herself within the crust thereof!

The Gogerddan Mines are first on the list, as having drawn 25,000*l.* Now, it so happens that *one* of these (Cwmsymlog), under the management of Sir Hugh Middleton, made an *annual* profit of this very sum, which *alone* is almost sufficient to pay 20 per cent. on the 137,000*l.*, said to have been expended on the *whole* of the unfortunate mines in this dark catalogue. It is made to appear, that this 25,000*l.* was altogether used in opening the Gogerddan Mines; but I am credibly informed, that nearly one-half of this sum has been paid away in salaries, and especially in London management, and that *no level at all* has been driven by the new company fairly through the ground under the old workings. At the same time, Darren, another of these mines, has been making profits on the unwholesome, and, in this case, most unfair, system of tribute working entirely. The Bog Mine engine-shaft is sinking in a good course of ore, and is likely to be very remunerative—whilst Cefn Cwm Brwyno has very good ore discovered, and is certain to be a good mine. It is publicly known that, in the last 10 years, Goginan has made a profit of 9000*l.* per annum; and the Lisburne Mines, a similar sum. Cwmystwyth must have made not less than 7000*l.* a year, or more—all which would give ample interest for the money invested; or, as the "Lead Miner" supposes, lost in this county. By-the-bye, why has he not told his readers that these last, which have been thus profitable, were worked with no larger an outlay than 5000*l.*? Probably, it did not suit him. If the returns were made known which accrued when Esgair Mwyn, Groiaugwynion, Cwmsymlog, Cwmystwyth, the Lisburne Mines, Goginan, Esgair Hir, Henfwlch, Talybont, Esgair Galed, Dilyfe, and the other various good mines of this county, were worked together (see historical notices of Mr. Bushel, Waller, Sir Hugh Middleton, and others), it would form an amount that would make this 137,000*l.* of invested capital appear exceedingly insignificant, and leave its rash quoter on the horns of a dilemma, which would at once prove him to be either very wicked or very silly.

If you think these few remarks worthy of a place in your paper, I may possibly trouble you, in a short time, with some observations on the general management of the mines in this county, now yielding such large profit, even under many disadvantages; and it will then be seen whether Cardiganshire does in reality exhibit such a bad field for mining speculations as your correspondent, "Lead Miner," would wish the world to believe. FAIR PLAY.

May 22.

THE COPPER TRADE.

SIR,—The copper to which you referred in your last Journal, as having arrived from Rouen, is some re-imported (originally shipped from Swansea) by Messrs. Williams, Foster, and Co. Messrs. P. Grenfell and Sons had some from there also recently. The truth is, that the French houses cannot pay their acceptances running, nor find cash for fresh supplies—trade being completely paralysed at Paris, and some thousand pounds' worth of bills, drawn for copper, having come back recently. Excepting for cash down, no more copper will be sent to France, and that will not readily be found as yet. The miners may complain of low prices, but what can the smelters do? They cannot go on stocking for ever; and where are markets to be found? The idea of resuscitating the Miners' Copper Company, or establishing a similar one, will do no good. Joint-stock companies have already done enough mischief to the copper trade—to the miners more especially.—A CONSTANT READER: *London, May 22.*

FOUR DRINIER'S PATENT SAFETY APPARATUS.

SIR,—On my return from Wales, on Saturday last, I saw, for the first time, with much astonishment and disgust, Mr. D. Lloyd's letter of May 9, inserted in your paper of the 13th inst. As to the charge of Mr. Lloyd, that the letter of the 6th inst., bearing his signature, was inserted "without either his knowledge or consent," I beg to state, in the most positive and distinct terms, that such assertion is utterly at variance with the truth, as will appear from the following short narrative:—

The apparatus sent down to the Gwan-cae-Gurwen Colliery, in February last (being the first made for the use of a pit), when put to work, was proved to be too weak, and the wedges too short; and I took it down, intending that my brother should make one much stronger. Mr. Lloyd, with a better feeling than he has shown since, offered to send me a sketch, after a little consultation with the smith, to point out where the parts should be strengthened. In a few days he sent a sketch, with an offer that his smith should make it, which we readily accepted. This sketch was previously sent into Staffordshire, for the approbation of the patentee; and, had it differed from his invention, he would not have sanctioned its adoption.

The apparatus made in Wales—the same in principle, but much stronger in all its parts than the original one—was put to work most satisfactorily on Wednesday, the 26th April. On Saturday, the 29th, I went over to the colliery from Swansea, and informed Mr. Lloyd, that a party of colliery proprietors would accompany me to the pit on Tuesday. I then asked him if he would write a letter to you, and to the editor of the *Cambrian*, when he said, "Yes; just put down what you wish me to say." On Tuesday, the 2d May, these gentlemen accompanied me to the pit, and saw the apparatus tested, to their entire satisfaction—Mr. Lloyd showing equal attention, and answering all their questions, with as much apparent good feeling as myself. In the colliery-office, after luncheon, I read the two notes I had prepared; and I declare, in the most positive terms, I had his sanction for their publication; but being then in negociation with him to accept an agency, I did not obtain his signature—a precaution that now appears to have been quite necessary. I did, however, read these very notes to his friend, Mr. Thomas, a surgeon, in less than ten minutes after I had parted with Mr. Lloyd.

At the close of this show day, I presume, the satisfaction expressed by all parties made the smith assume more consequence than discretion, and he made a demand upon me for 30*l.*, for what he was pleased to call his improvements, with which, as the representative of the patentee, I at once refused to comply; and I subsequently told Mr. Lloyd, that this was also the determination of my brother. Mr. Lloyd threatens that he is about to take out a patent for his improvements. With this, individually, I have nothing to do; but can assure him, and the public, that the patentee is fully prepared to protect his rights against any attempt to infringe them.

Whether the payment of the sum of money demanded by the smith would have satisfied both parties, I cannot say; but I verily believe that, had this claim been acquiesced in, my brother's invention would not have been impugned; nor should I have been subject to so scurrilous an attack upon my character; and, if Mr. Lloyd has a particle of honest or gentlemanly feeling, he will take as public a mode of acknowledging that his statement was uncalled-for and untrue. I have to apologise to you for the length of this letter, and to thank you for the interest you have evinced in the success of my brother's invention.—JOSEPH FOURDRINIER: *Arlington-street, Camden Town, May 25.*

AMOUNT OF BULLION IN RUSSIA.—Notwithstanding it is well known, that Russia produces more gold than any other portion of the globe, the amount of wealth kept in the Royal coffers almost exceeds belief. The Emperor Nicholas has always—by the aid of this almost exhaustless store, because being continually augmented from the mines—been enabled to assist nations, bankers, and merchants, in the pressing hour of need. He has lately ordered the sum of 6,000,000 rubles (about 1,000,000*l.* sterling) to be transferred from the vaults of the citadel to the treasury; the funds of which, from many late urgent circumstances, had become reduced from 30,000,000 to 1,140,000 rubles; after this deduction, there remained in the vaults the almost incredible sum of 109,588,595 rubles, being a larger amount of specie and bullion than is possessed by any other state. A decree has been issued by the emperor, to the effect—that neither gold nor silver shall be exported to the continental states during their present unsettled position; but this, of course, does not extend to England. On the other hand, we learn, from an accredited source, that there is plenty of paper always ready for issue; but as to the above wealth, no one in Russia has any belief in its existence. At the annual inspection, several mercantile men are always present; but, it is said, they are only shown one or two bags open, and do not know what the others contain.

COALS, CINDERS, AND CULM.

A return has just been prepared, by order of the House of Commons, of the total quantities of coal, cinders, and culm exported from the United Kingdom to all parts of the world, in each year, from 1840 to 1847, both inclusive—distinguishing the quantities exported to the countries named below respectively, from those exported to all other parts. The total for the years 1840 and 1841 were respectively 1,606,313 tons, and 1,848,294 tons; the details of the remaining years are as follows:—

Whence exported.	1842.	1843.	1844.	1845.	1846.	1847.
Cuba ..... *Tons*	35,653..	15,221..	14,844..	13,218..	17,358..	19,049
Chili	1,877..	1,840..	8,219..	15,149..	8,664..	9,690
Peru	340..	301..	2,277..	5,106..	3,067..	4,320
Columbia	50..	900..	272..	216..	320..	108
United States	60,836..	33,948..	29,822..	58,381..	45,536..	46,188
France	515,975..	462,941..	412,902..	647,967..	670,035..	641,010
Spain and Canaries..	53,546..	64,009..	74,836..	101,336..	104,286..	97,509
Norway	18,800..	18,951..	22,138..	33,036..	31,439..	32,753
Sweden	37,995..	25,961..	25,561..	34,664..	31,085..	26,589
Russia	83,582..	116,041..	94,144..	150,422..	138,485..	108,378
All other parts	1,190,848..	1,126,098..	1,069,056..	1,471,785..	1,480,833..	1,497,577
Total.....	1,999,504	1,866,211	1,754,171	2,531,282	2,531,108	2,483,161

THE METAL TRADE OF FRANCE.

Importations of Minerals into France (in metrical quintals) during the first quarter of 1848, compared with the first quarter of 1847 and 1846:—

Minerals.	1848.	1847.	1846.
COPPER—England	7,617	11,709	5,726
Chili	3,841	20	214
Other parts	8,798	4,608	1,668
Total	20,256	16,337	7,608
TIN	3,309	1,855	1,424
IRON—England	115,018	69,953	50,586
Belgium	112,760	167,280	94,172
Other parts	11,159	7,232	7,123
Total	238,937	244,465	151,881
COAL—Belgium	2,037,798	2,817,129	2,580,497
England	1,357,045	761,266	991,831
Germany	518,391	522,311	482,005
Other parts	1,261	83,015	889
Total	3,914,495	4,183,721	4,055,292
LEAD	57,397	38,685	38,170
ZINC—Germany	518	—	—
Belgium	10,025	8,241	11,685
Hanseatic Towns.....	4,792	7,461	2,756
Other parts	5,242	6,117	4,314
Total	26,577	21,819	18,755
Machines and mechanical instruments.. *Frs.*	1,239,152	1,707,707	2,414,127
Stocks in hand April 1— in metrical quintals.			
Copper	4,411	2,324	385
Tin	1,773	1,164	358
Iron	86,251	76,847	26,316
Lead	70,374	77,744	13,228
Zinc	1,009	460	349

CONTRACTS FOR COALS.—The Board of Ordnance has issued a notice to coal contractors for furnishing, from the 1st July next to 30th June, 1849, such quantities of coals as may, from time to time, be required for barracks and ordnance stations in Great Britain and the Channel Islands. Tenders must be addressed to the secretary on or before Wednesday, the 7th June; but no proposal will be noticed unless made on or annexed to a printed form, which must be duly filled up, and the prices inserted in words at length. Tenders to be made for the several barracks and stations as joined together in the particulars of the contract.

CONTRACT FOR IRON.—The East India Company will be ready on Wednesday, the 7th June, to receive proposals for the supply of British iron and best cast steel, files, &c.

FRENCH CONTRACTS FOR BRITISH COAL AND IRON.—The first contract of the new Government of France, for supplying 3,100,000 kilos of coal, will be entered into by the Minister of Marine this day, to be delivered at the National Arsenal of Rochefort, and also for the delivery of 800,000 kilos of cast-iron at L'Orient. Very large contracts, both for British coal and iron, have been announced by the Marine Department, for the use of the steam navy, and other purposes. The admission of these two important products of our mining industry, at a modified duty, is now under the serious consideration of the Provisional Government.

IMPORTATION OF MACHINERY INTO BELGIUM.—We stated in our last that a decree, dated the 5th May, for the free importation of machinery, &c., had passed the Chambers. Formerly there was a duty of 33 per cent. upon foreign machinery, but it was found necessary to render the free importation of that portion which was exclusively for some new operation, and was renewed for three years, from the 12th April, 1845, which has now expired. By the new decree, Government is authorised to exempt from duty steam-engines, or any new apparatus for agricultural and manufacturing purposes. Hitherto articles of machinery, or implements, unknown in Belgium, were admitted free. Henceforth the duty will be taken off all machinery or implements, imported for the purpose of founding a new establishment, or to increase the works of an old one. The Chambers of Commerce, of Liege and Gand, have long petitioned that every part of machinery necessary for their blast furnaces should be admitted free of duty, and the town of Verviers has shown itself strongly in favour of free trade with England, and that the Government should take off the export duties on Belgic manufactures, which has been most judiciously conceded. All machinery allowed to be entered free of duty can, by the new decree, be publicly exhibited for the term of two months in some place specially chosen for that purpose by the authorities, to serve as models to the engineers and manufacturers of the country. If the Belgium engineers refuse, after a guarantee, to make within a specified time one or more engines, similar to the model—or, should they require exorbitant prices, compared with what they can be obtained for in England, the parties requiring them can import them free. A party having an establishment in England, and one in Belgium, will be at all times allowed to import whatever machinery or apparatus he may require, without duty, for carrying on his works. This decree is only applicable to machinery, implements, &c.; but a project of law is now preparing to be presented to the Chamber, for a very great reduction in the importation of British iron.

THE ROYAL SCHOOL OF MINES AT MADRID.—This splendid, and most useful institution, for the training of those who are about devoting themselves to mining operations, has received a grant from the Government, for the purpose of extending its size, and also to establish a school of practical engineering, civil as well as mining—so that the pupils attending the lectures, or boarders in the college, may have every opportunity of becoming well acquainted with the different branches of these sciences. The School of Mines at Madrid has stood, for many years, pre-eminent among the institutions of Europe for the study of mining, as it is to Spain that Mexico, and, indeed, the whole of South America, from the time of the discovery of that vast and rich mineral continent of the New World by Christopher Columbus, down to the throwing off the yoke of the mother country, is indebted for the extensive explorations, and working of the mines, which have rendered it so renowned in modern times, and in which, at present, so large a British capital is invested by the companies who continue the former works of the old Spaniards and primitive aborigines. The Spanish Crown having lost the whole of her rich possessions, with the exception of the Island of Cuba, the Philippine Islands, &c., is now determined to turn to the utmost advantage its own local mineral resources—and to accomplish which, it not only gives great encouragement to adventurers, native and foreign, to embark in mining pursuits, but is also extending the opportunities for studying the science. The collection of minerals at Madrid is considered one of the finest in the world, and they are assorted with the utmost care by experienced mineralogists and travellers, who have collected specimens of every description of ores and minerals particular to each country which they have visited. The School of Mines of Paris, Vienna, Berlin, and even St. Petersburgh, are making great additions; but that of Madrid will not be inferior to any, as the engineering department will contain a select model-room of the various improvements which have been made, in England, in every description of machinery, but particularly those most applicable to mining operations, so that the pupils will have a full opportunity to study this branch of science.

ANTIMONY MINES OF BRUNI.—Mr. Burns, who has contracted with the Sultan of Bruni, a state in Borneo, for the working of some antimony mines at Tautau and Bintooloo, has proceeded there with a staff, in some boats of the sultan's, and accompanied by one of his relatives. These mines are much more extensive than those of Sarawak, but they are at a great distance from water carriage, which is a drawback to their value. The Rivers Tautau and Bintooloo were about being surveyed, with a view to improve the water transit.

AYRSHIRE IRON COMPANY.—A special general meeting of the above company was held at Comrie's Royal Hotel, Glasgow, yesterday week—James Watson, Esq., in the chair—when Messrs. A. Waters, A. Drysdale, R. Wilson, T. Biggar, and J. Watson, were appointed a committee to wind-up the affairs of the company, to convert the funds and property of the company into money with all possible dispatch, and to have power to make a call, *pro rata*, on the partners to contribute in making up the loss found to have been sustained.

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

Bank Stock, 9 per Cent., 191 3	Belgian, 4½ per Cent., —
3 per Cent. Reduced Ann., 82⅞ ⅞	Dutch, 2½ per Cent., 42 1
3 per Cent. Consols Ann., 84¼	Brazilian, 5 per Cent., 68 9
3¼ per Cent. Ann., 83⅝ ⅞	Chilian, 6 per Cent., 81 80
Long Annuities, 8¼	Mexican 5 per Cent., 15¼
India Stock, 10½ per Cent., 232 4	Russian, 5 per Cent., 86½
3 per Cent. Consols for Acc., 84¼ ½	Spanish, 5 per Cent, 12 ½
Exchequer Bills, 1000*l*, 2½d. 42 37 pm.	Ditto 3 per Cent., 21⅞ ½

MINES.—The amount of business transacted this week has not improved upon last, although a fair proportion of shares appears to have changed hands.

The directors of the Devon Great Consols, at their meeting, on Wednesday, declared a dividend of 5*l.* per 1024th share, for the past two months. These shares continue in request, and fully maintain their advanced price, several having changed hands during the week.

The present depressed state of the copper market has a most serious influence upon returning mines generally, as will appear from the following fact:—The parcel of ores sold last week, from these mines, for April, realised 8092*l.*, with a standard of 81*l.* 17s., produce 10⅛; whilst the standard for March, 1847, being the highest the company ever received, gave a difference of about 3000*l.*—that is, had the adventurers the standard of March, they would have received 3000*l.* more on their last week's sale, the calculation being made from their own private assay.

Trehane bi-monthly account-meeting was held on Thursday, when a dividend of 25s. per 256th share was declared. The official report of the meeting has not reached us.

North Roskear is reported to have improved, and buyers have, consequently, appeared. Gwinear Consols have been inquired after, arising from same cause.

Tamar, Tincroft, Callington, and Herodsfoot shares, have been in request, and we learn that much business has been done in the former. Seton and East Rose shares have been offered for, but do not find sellers at the prices proffered.

Shares in the following mines have changed hands:—Devon Great Consols, Great Rough Tor, Carwinning Hill, Tamar, Herodsfoot, Trehane, Pennant Gwinear, Callington, Carn Brea, Tincroft, Trelawny, &c.

Trelawny account-meeting was held on Tuesday, when a gratifying report of the prospects of the mine, as well as financial statement given, was highly satisfactory. The profits upon the two months appear to be about 200*l.*, which, added to the previous balance, gives 862*l.* 19s. 3d. now in hand.

The East Tamar Consols Mining Company had their first meeting on Tuesday last, when every preliminary necessary for the perfect working of a great and profitable mine was arranged. It appeared, that the committee of management had the gratification of finding their exertions had met the unanimous approval of the shareholders generally. Their work, in forming the present company, appears to have involved great personal labour, responsibility, and solicitude; and by the exercise of precautionary measures and laudable efforts, they have brought into a satisfactory and profitable position one of the most encouraging adventures in the counties of Cornwall and Devon.

The South Tamar Mine, adjoining the above, and which was suspended under similar circumstances, is about being re-commenced—nearly one moiety of the shares having been subscribed for within the last few days; and as the operations in the two mines can be carried on with reciprocal advantages and the same management, there is not the least doubt of the whole of the shares being taken up immediately.

Great Rough Tor bi-monthly meeting was held on Thursday—and, by the official reports presented, there appears but little doubt of this mine maintaining the position her most sanguine projectors entertained.

In foreign shares some transactions have taken place, especially in the St. John del Reys, for which inquiries are still being made at an advanced price. Bolanos, United Mexicans, Australians, Altens, Real del Montes, and Asturians, have also been done, but not to any extent.

Dispatches have been received from the mines by the St. John del Rey, National Brazilian, and the Imperial Brazilian Mining Companies. The advices from the former mines, of the 9th and 18th March, are of a very satisfactory character, showing a profit for the month of February, of 2429*l.* 8s. 6d., and that a remittance of gold, to the value of about 12,000*l.*, would start by same conveyance, which has been duly received. The National Brazilian returns from the Cocaes and Cuiaba Mines amounted to 15 mcs. 7 ozs. 3 oits. 32 grs., dated from 7th to 17th March. There is nothing important from the Imperial Brazilian Mines—a portion of the machinery for Bananal had been sent off from the port to the mine, and the heavier parts would soon follow.

By letters received this week, the Asturian Mining Company are advised that the furnaces are now in full blast; and, from the trials made, some very superior iron has been returned. The new process for distilling the quicksilver ores will be shortly in course of operation, by which means the system formerly adopted will be set aside for a more rapid return. The prospects of the company are looking by far more cheering than they have for a long time past.

The following arrivals of specie have taken place since our last—viz.: H.M. packet, *Swift*, arrived at Falmouth from the Brazils, &c., on the 19th inst., having on freight about 35,000*l.* in specie—about 12,000*l.* of which is on account of St. John del Rey Mining Company. On Monday, at Southampton, the Royal Mail steam-ship, *Avon*, with the West Indian mail, and valuable freight, consisting of $312,272 on merchants' account from Mexico; 902 ozs. of gold dust; 21,511 ozs. of silver; 7767*l.* in British coin, and general cargo. The auxiliary screw steam-ship, *Sarah Sands*, and the *America*, arrived at Liverpool, on Monday, from the United States—the former having on freight specie to the value of 60,000*l.*, and the latter 100,000*l.*

RAILWAYS.—At the commencement of the week there was but little business transacted in the railway share market, and prices remained almost stationary, at the quotations of Saturday; there was a slight rally, however, on Tuesday; but on Wednesday, again, the attendance in the house was so thin that the quotations could be considered little else than nominal. Perhaps a trifling increase of business took place in foreign railway shares towards the close of the week, and there has been a shade of improvement in prices.

A meeting of the West Cornwall Railway proprietors took place at the King's Arms Hotel, Westminster, on Thursday last, for the purpose of enabling the directors to answer the report of the committee, appointed at the last meeting to investigate the company's affairs. The answer of the directors was in the form of a report, which appeared to be generally satisfactory. The reports were both adopted, with a few dissentients, and it was agreed to postpone the progress of the works for six months. The ballot for directors resulted in the election of the following six gentlemen:—Captain Moorsom, and Messrs. Pearse, Wills, Ching, Proctor, and Harrison.

A meeting of the shareholders of the Brighton Railway Company took place yesterday, at the London Tavern, to consider the propriety of allowing the directors to spend 75,000*l.* in steam boats, and make arrangements with the Direct London and Portsmouth Railway. Mr. Whishaw moved an amendment—that the company have nothing to do with steam-boats or the Portsmouth Railway—which, on a show of hands, was supported by an overwhelming majority, not more than a dozen being held up for the directors. A poll was demanded, the result of which will be stated at a meeting, at 1 o'clock this day.

HULL, THURSDAY.—We have to record another week of depression in the share market, with an almost entire absence of business. Political events have exercised their usual influence, and there is rarely now any thing cheering in this class of exciting causes.—Local stock generally is flatter than for some time past, and sales could not be effected without submitting to lower rates than those last realised.

RAILWAY TRAFFIC RETURNS.

Name of Railway.	Lgth. Rway.	Present actual cost.	Price per share	Last Div.	Traffic Returns. 1848	1847
Birkenhead, Lancashire, & Chesh.	15	997,284	37	5 *p. c.**	£674	654
Caledonian	130	3,594,470	31½-2	—	3975	—
Chester and Holyhead	59½	2,871,470	52	—	648	—
Dublin and Drogheda	35	754,529	27⅞	—	840	870
Dublin and Kingstown	7½	473,282	—	6	966	804
Dundee, Perth, & Aberdeen Junc.	47	415,073	28½	8	—	317
East Anglian (Lynn to Ely)	55½	1,062,742	7½	—	512	—
East Lancashire	26	1,733,915	18½	—	990	590
Eastern Counties and Norfolk	295	9,833,859	15½	4	14201	11590
Eastern Union	51½	979,926	20	-	1109	1106
Edinburgh and Glasgow	53	2,481,767	45½	—	3777	3596
Edinburgh and Northern	29	1,392,092	18½	4*	1518	—
Glasgow, Paisley, and Ayr	64½	2,097,321	80	6	2115	2473
Glasgow, Paisley, & Greenock	23	845,554	15½	4	1129	1125
Gt. Southern & Western, Ireland	110½	1,809,787	23½	4*	2396	1551
Great Western	281½	10,970,636	95	7	20942	19622
Kendal and Windermere	10½	169,888	23	—	162	—
Lancaster and Carlisle	70	1,396,193	51	4	1855	1128
Lancashire and Yorkshire	136½	7,597,618	86	7	9277	8946
London and North Western	428	21,513,354	132½	8	41748	43724
London and Blackwall	4	1,241,061	5	1½	1059	1132
London, Brighton, & South Coast	161½	6,087,822	33	4	8527	7412
London and South-Western	189	6,264,164	49	6	6630	7969
Londonderry and Enniskillen	14½	145,135	16	—	128	177
Manchester, Sheffield, & Lincolnsh.	62	2,336,624	60½	5	2571	1927
Maryport and Carlisle	28	440,851	40	—	533	710
Midland Company	422½	9,853,122	104½	7	21198	20107
Midland Great Western (Irish)	36½	725,332	10½	4*	1051	—
Newcastle and Carlisle	66½	1,407,375	113½	6	2251	2387
North British	81	2,800,748	22½	5	2081	1686
Shrewsbury and Chester	17	780,272	15½	—	540	467
South Devon	50½	1,609,071	20	—	1565	613
South-Eastern	165½	6,932,181	25½	6½	8422	7638
Taff Vale	38	820,056	—	5½	1512	1481
Ulster	36	684,684	52	4½	854	869
Whitehaven Junction	12	147,095	4	4½	186	—
York, Newcastle, & Berwick	242½	4,466,526	32½	9	12036	9346
York and North Midland	230½	3,799,297	71	10	8100	6271

* Interest.—Total for last week, £192,238, being an increase of £24,569 over last year.

PRICES OF MINING SHARES.

BRITISH MINES.

Shares.	Company.	Paid.	Price.
1000	Abergwessin	7	—
512	Albert Consols	1	2½
1024	Alfred Consols	4½	14
225	Andrew and Nanglies	28½	8
1000	Antimony and Silver-Lead Mining & Smelting	5	5
1624	Balleswidden	9	18
128	Balnoon Consols	25	25
10000	Banwen Iron Co.	2	—
1000	Barristown	4½	8
4000	Bedford	2½	3
1244	Birch Tor Tin Mine	9½	2
8000	Blaenavon	50	23
100	Botallack	175	80
120	Brewer	5	7
10000	British Iron, New, regis.	10	12
—	Ditto ditto, scrip	10	10
128	Budnick Consols	52½	30
128	Burthy	20	21
128	Callestock	17	30
1000	Callington	19	27
20000	Cameron's Steam Coal	6	5½-6
256	Caradon Copper Mine	9½	2
256	Caradon Mines	22½	17
256	Caradon United	24	5
256	Caradon Wh. Hooper	21	14
1000	Carn Brea	15	90
3000	Carthew Consols	1½	6
2048	Cascade	1	2
112	Charlestown	220	30
166	Cleveland	9	5
512	Coatlithe Hill	½	1
1900	Combmartin	7½	3
500	Comblawn	5½	6
128	Comfort	45	75
256	Condurrow	20	30
2560	Cook's Kitchen	14	2
1000	Coombe Valley Quarry	2½	3½
6500	Cornish Mining Co.	2	2½-¾
1000	Copper Bottom	1½	6½
1024	Cosheen	4½	20
225	Craddock Moor	16½	15
128	Creeg Braws	120	100
500	Cubert Mine	12½	10
1000	Cwm Erfin	3½	3½
300	D. Prior & Buckfastleigh	14	26
7100	Derwent	8½	5
1024	Devon & Courtenay Con.	7½	1½
1024	Devon Great Consols	1	210
1000	Dhurode	2	5
186	Dolcoath	30	40
2560	Drake Walls	4	4
10000	Durham County Coal	45	9
3000	Dyfngwn	10	12½
256	East Alvenney	10	25
112	East Caradon	47	47
2048	East Crowndale	5½	4½
512	East Combe Silver-Lead	6½	6½
128	East Pool	5	10
100	East Relistian	22	40
9000	East Tamar Consols	½	1
—	East Wheal Albert	1	3
94	East Wheal Crofty	125	280
1024	East Wheal Fortune	2	3
1024	East Wheal Friendship	3	3½
128	East Wheal Rose	50	900
2048	East Wh. Rough Tor	½	2
—	East of Scotland Iron Co.	2½	1½
123	East Wheal Seton	14	10
256	Elborough	1½	2
256	Exmoor Wh. Eliza	4	6
512	Fowey Consols	40	45
6400	Gadair	2	2
20000	Galvanised Iron Co.	10	9½
4000	Gen. Mining Co. for Irel.	1½	1½
2048	Georgia Tin Mines	1½	1½
256	Gonamena	34	30
128	Goonvrea	4	1½
244	Grambler & St. Aubyn	—	10
100	Great Consols	1000	400
256	Great Callestick Moors	22	25
2560	Great Michell Consols	1½	3½
256	Great Resugga Moor	11	4
512	Gt. Wh. Rough Tor Con.	15½	18
100	Grogwinion	5	—
256	Gwinear Consols	7	6
6000	Heignston Down Con.	½	2½
256	Herodsfoot	18	24
10000	Hibernian	12½	1½
239	Hobb's Hill	6	3
1000	Holmbush	19	6
827	Kirkcudbrightshire	5½	5
2048	Lamherooe Wh. Maria	11	4
128	Lelant Consols	90	60
160	Levant	—	90
1000	Lewis	15	6½
1000	Llwyn Malees	5	—
3600	Llynvi Iron	50	50
256	Lostwithiel Consols	15	15
6000	Marke Valley	10	2½
5000	Mendip Hills	2½	1
5000	Merionethshire Slate & Slate Slab Co.	1½	2
20000	Mining Co. of Ireland	7	5½
256	New East Crowndale	3½	3½
128	North Fowey Consols	37	34
100	North Pool	45	450
140	North Roskear	5½	130
256	North Wh. Abraham	1	1
262	North Wh. Leisure	1½	2
128	North Wh. Providence	2½	3
15000	Northern Coal Co.	23	2
128	Par Consols	—	1000
4000	Pennant	1½	2
100	Penrhiw	30	65
1280	Perran St. George Un.	13	20
128	Perran Wh. Virgin	9½	10
512	Plymouth Wh. Yeoland	6½	23
256	Polsaith Consols	4½	7
112	Providence Mines	35	45
10000	Rhymney Iron	50	20
10000	Ditto New	7	6½
2500	Rhoswhiddol Mine	—	10
1000	Rosewall Hill	1	5
256	Rosewarva Mines	—	12
—	Shotts Iron Company	50	50
3072	South Callington	—	2
128	South Caradon	10	450
1100	South Dolcoath	3	2½

BRITISH MINES—*continued.*

Shares.	Company.	Pa	Price.
256	Sth. Friendsh. Wh. Ann	15	25
200	South Harvannah	10	25
256	South Molton	5	8
256	South Tolgus	7½	85
256	South Trelawney	20	10
128	South Yeoland	16½	20
128	South Wheal Basset	110	68
256	South Wh. Betsey	2½	12½
124	South Wh. Francis	160	220
256	South Wh. Hope	—	5
1000	South Wh. Maria	2½	2
256	South Wh. Sophia	4	4½
10000	Southern & Western, Irish	2	4
280	Spearne Moor	30	40
256	St. Austell Consols	9	6
94	St. Ives Consols	—	320
128	St. Michael Penkivel	5	10½
999	St. Minver Consols	1	6
1000	Stray Park	42	16
9600	Tamar Consols	3	4½-5½
1024	Tavy Consols	4	9
6000	Tincroft	7	4½-5½
1000	Tin Vale	2½	4½
128	Tokenbury	152½	10
256	Trehane	2½	23
5000	Treleigh Consols	6	3
2000	Trenance	2	50
96	Tresavean	10	210
120	Trethellan	5	16
120	Treviskey and Barrier	130	110
288	Trevean	1½	25
128	Trewellard	12	26½
100	United Mines	300	350
256	Wellington Mines	15	25
128	West Basset	45	25
256	West Caradon	20	100
128	West Cargoll	2	12
512	West Fowey Consols	40	15
256	West Providence	9	25
200	West Seton	40	175
—	West of Scotland Iron Co.	210	210
120	West Trethellan	5	30
256	West United Hills	—	5-6
512	West Wheal Francis	1½	5
256	West Wh. Friendship	9	8
3725	West Wheal Jewel	11	1½
2560	West Wh. Maria	3	1
256	West Wheal Shepherd	5	2½
256	West Wheal Tolgus	21½	5
256	West Wheal Treasury	19	12-14
5200	Wicklow Copper	5	10½-¾
184	Wheal Adams	51	10
1000	Wheal Agar	—	10
256	Wheal Albert	10	8
128	Wheal Acland	13	2
256	Wheal Allen	2	5
240	Wheal Anderton	21	20
128	Wheal Ann	—	50½
512	Wheal Ann, Bridford	1	2
512	Wheal Anna Maria	4½	5½
1024	Wheal Ash	4½	8
120	Wheal Bal	5½	20
2560	Wheal Barbara	1½	4-5
256	Wheal Benny	12½	7
256	Wheal Blencowe	21	5
256	Wheal Bucketts	20	5
256	Wheal Calstock	5	10½-11
136	Wheal Clifford	190	190
1024	Wheal Coad	½	5
128	Wheal Courtenay	—	20
6000	Wheal Curtis	3	3½
256	Wheal Dyke	12	13
256	Wheal Fortescue	6½	5
388	Wheal Franco	27	30
128	Wheal Harriet	45	50
256	Wheal Jane	21	15
—	Wheal Lawrence	—	3½
256	Wheal Louisa	8½	8
112	Wheal Margaret	79	350
512	Wheal Mary Ann	5	12
237	Wheal Mary Consols	42½	26
210	Wheal Prospect	4	7
120	Wheal Reeth	41	150
128	Wheal Rose	60	15
99	Wheal Seton	214	900
194	Wheal Sisters	32½	17
256	Wheal Sophia	5½	10
128	Wheal Spearne	10	75
128	Wheal St. Ann	9	15
550	Wheal Trescoll	1	12½
260	Wheal Trelawny	7½	65
256	Wh. Tremaine (St. Ervan)	4½	20
256	Wheal Tremayne	35	15
128	Wheal Trew	20	21
256	Wheal Trevenna	3	4
92	Wheal Tryphena	140	265
242	Wheal Venland	29½	30
256	Wheal Vlow (Perranz.)	½	½
184	Wheal Vyvyan	—	60
256	Wheal Williams	6	8

FOREIGN MINES.

Shares.	Company.	Paid.	Price.
5000	Alten Mining Company	14½	3
15000	Asturian Mining Co.	12	3
20000	Australian	2½	2½
10000	Anglo-Mexican Co	100	2
12374	Ditto Subscription	25	2½
6000	Barossa Range	½	2
3000	Bolanos	150	2½-3
2000	Ditto Scrip	15	2½
12000	Brazilian Imperial	23	3½
10000	Cobre Copper Co.	40	15½
10000	Copiapo Mining Co	14	2½
10000	General Mining Ass'n.	20	11½-12
5000	Kinzigthal Mining Ass.	2	4
20051	Mexican Company	59	—
2000	Mexican & South Amer.	8	1½
5000	Mocaubas & Cocaes	30	6
29320	Rl. del Monte, regis. / Ditto unregistered	28½	1½-½
	Ditto Red Debentures	—	10
	Ditto Black ditto	—	5
	Ditto Loan Notes	150	60
7000	Royal Santiago	10	6
2000	Pachuca Mines	4	4½
11000	St. John del Rey	15	8½
43174	United Mexican ... Av.	28½	2½

*** We should feel greatly obliged by agents, or others interested, furnishing us with such corrections for our Share List as we may not have received through our usual channels of information—our object being, to present as accurate a list of prices as can be obtained—to procure which, we solicit the aid of correspondents in general.*

LATEST CURRENT PRICES OF METALS.

LONDON, MAY 26, 1848.

	£	s.	£	s.	d.
IRON—Bar *a*. Wales .. *ton*	6	0—	6	5	0
„ .. London	7	0—	7	5	0
Nail rods „	0	0—	8	0	0
Hoop (Staf.) „	0	0—	9	15	0
Sheet „ „	0	0—	10	10	0
Bars „ „	0	0—	9	5	0
Welsh cold-blast foundry pig	3	10—	4	5	0
Scotch pig *b*, Clyde	2	4—	2	5	0
Rails, average	0	0—	6	5	0
Chairs	0	0—	4	4	0
Russian, CCND *c*	0	0—	17	0	0
„ PSI	0	0—	——		
„ Gourieff	0	0—	——		
„ Archangel	0	0—	13	0	0
Swedish *d*, on the spot	0	0—	11	10	0
„ Steel, fagt.	0	0—	16	0	0
„ „ kegs *e*	0	0—	13	10	0
COPPER—Tile *f*	0	0—	87	10	0
Tough cake	0	0—	88	10	0
Best selected	0	0—	91	10	0
Ordin. sheets, *lb.*	0	0—	0	0	10
COPPER—Ord. bottoms	0	0—	0	0	11
YELLOW METAL SHEATHING	0	0—	0	0	8½
TIN—Com. blocks *g* .. *cwt.*	3	16—	3	17	0
„ bars	3	16—	3	18	0
Refined	3	19—	4	1	0
Straits *h*	0	0—	3	14	0
Banca	4	2—	4	4	0
TIN-PLATES—Ch., IC *i*, *box*	1	8—	1	9	0
„ IX	1	14—	1	15	0
Coke, IC	1	4 6	1	5	0
„ IX	1	10 6	1	11	0
LEAD—Sheet *k* .. *ton*	0	0—	18	0	0
Pig, refined	18	0—	18	5	0
„ common	0	0—	16	10	0
„ Spanish, in bd.	16	10—	16	15	0
Red	0	0—	19	10	0
Dry White	0	0—	24	0	0
Shot (Patent)	0	0—	20	0	0
SPELTER—(Cake) *l* on spot	0	0—	13	10	0
„ for arrival	0	0—	——		
ZINC—(Sheet) *m* export.	0	0—	23	0	0
QUICKSILVER *n* .. *lb.*	0	0—	0	3	9

a Discount 2½ per cent. *b* Net cash. *c* Discount 2½ per cent. *d* Ditto in bond. *i* Discount 3 per cent. *k* Ditto 2½ per cent. *l* Net cash. *e* In kegs ½ and ¼-inch. *f* Discount 3 per cent. *g* Ditto 2½ per cent. *h* Net cash. *m* Discount 1½ per cent. *n* Discount 1¼ per cent.

The transactions in metals this week have been very unimportant—the very small demand not extending beyond immediate wants.

ENGLISH TIN is in an unsettled state; for, although no actual reduction is decided on by the smelters, we consider the price (2s. per cwt.) lower than last week.

SPELTER is dull, and price drooping.—QUICKSILVER is 1½d. per lb. below last quotation.

GLASGOW PIG-IRON TRADE, MAY 25.—Business here is still in a very depressed state, and in our pig-iron market the greatest dullness prevails, without any appearance of improvement. The price, however, continues firm at our quotations of last week—at which a few small lots have been sold. We have buyers to-day, to a limited extent, at 43s. 6d. net cash—but sellers ask 44s. to 44s. 6d,

PATENT CAST-IRON PIPE MANUFACTORY,
CHARLES-STREET, ST. ROLLOX.
D. Y. STEWART & CO. beg respectfully to inform Merchants, Engineers, and Directors of Gas and Water Companies, that, having completed the erection of their works for the exclusive MANUFACTURE of CAST-IRON PIPES, are now prepared to enter into CONTRACTS for the SUPPLY of that ARTICLE.
D. Y. S. & CO., having no connection with any smelting-furnaces, can assure parties, that their pipes will be made from the best mixtures of pig-iron; and Stewart's Patent enabling them to make perfect moulds without any JOINT OF PARTING, and the casting being performed while the mould is in a vertical position, ensure an equality of thickness of metal hitherto unattainable.—Glasgow, May, 1848.

PATENT GALVANISED IRON AND WIRE ROPE WORKS,
MILLWALL, POPLAR.
ANDREW SMITH begs to inform the Mining, Railway, and Shipping interests, that he has obtained a PATENT for an IMPROVED METHOD of GALVANISING IRON, producing a much superior article at a considerable saving in cost—the improved process for galvanising wire rope, adding only £10 per ton instead of £20, under the ordinary processes. The rope is extensively used in damp situations, for mining and railway purposes, and for ships' standing rigging.

POLBERROW MINES.—We understand, that at a meeting which was held at Messrs. Smith and Roberts's office, on Monday last, satisfactory arrangements were made with the creditors of these mines for the settlement of their claims. We learn that the labourers will receive the full amount of their debts without deduction, and it is probable the mines will again be set to work in the course of about 10 days or a fortnight, by a newly-formed company, and under the management of Mr. John Taylor, jun.—At a time of such general distress, it is important that extensive undertakings should not be abandoned; and the county—and particularly the parish of St. Agnes—is really much indebted to all the parties interested, and especially, we think, to the Vice Warden's Court, and its Registrar, for the consideration evinced by them in the indulgent exercise of their powers, and the personal inconvenience and trouble to which they have subjected themselves, in the evident desire to preserve a property so valuable to the county.—*Cornwall Gazette.*

SOUTH WALES RAILWAY.—We state, for the information of railway contracters and others, that a piece of masonry has recently been erected on the works of this line, which reflects great credit on all concerned—we refer to a bridge which has been built near Lanharren, for Messrs. Willett, Warren, and Co. The bridge is 82 ft. span, and 17 ft. wide, with a "rise" of 10 ft. It was commenced and "keyed" in the short space of 12 days—there being no more than 5 or 6 cubic yards of stone prepared when the men began. The number of masons employed did not average 13 per day. The work, which was performed under the superintendence of Patrick Murray, has been inspected by highly-competent persons, and declared perfectly satisfactory.—*Monmouthshire Merlin.*

SILVER-LEAD ORE.

Sold at Helston, on the 19th May, 1848.

Mine.	*Tons.*	*Price per ton.*	*Amount.*
Wheal Rose	62 (of 20 cwts.)	£20 6 0	£1258 12 0
ditto	10 (of 21 cwts.)	13 16 6	138 5 0

Tons, 72—Amount of money, 1396*l.* 17s.—Two months' sale.

LEAD ORES.

Sold in London.

Mines.	*Tons.*	*Price.*	*Purchasers.*
Holmbush	24	£17 13 0	B. Somers.
Sold at the Mine.			
East Wheal Rose	67	£11 7 0	B. Somers.
ditto	50	10 13 0	R. Michell & Son.
ditto	33	11 11 6	B. Somers.
ditto	60	13 10 6	R. Michell & Son.
ditto	36	10 15 0	ditto
Sold at the Mine.			
Llanfair	40	£24 10 6	B. Somers.
Sold at Bagill.			
Barristown	38	£11 11 0	J. P. Eyton.
Cwmystwith	24	7 11 0	Newton, Keates, & Co.
Sold at Liskeard.			
Trehane	60	16 16 6	——

COPPER ORES.

Sampled May 10, and Sold at Pearce's Hotel, Truro, May 25, 1848.

Mines.	*Tons.*	*Price*	*Mines.*	*Tons.*	*Price.*
Consolidated	95	£4 14 0	Bolenna	32	£2 18 6
ditto	90	4 4 6	ditto	20	5 12 6
ditto	86	5 0 6	ditto	15	2 14 0
ditto	84	4 12 0	South Caradon	86	6 8 6
ditto	78	1 14 6	ditto	80	6 14 0
ditto	77	4 3 0	ditto	51	3 13 0
ditto	75	5 1 6	ditto	43	4 12 0
ditto	65	2 4 0	ditto	29	3 13 6
ditto	60	6 5 0	ditto	24	7 3 0
ditto	50	8 5 6	Treviskey	93	3 0 6
ditto	49	4 7 0	ditto	65	5 4 0
ditto	42	5 10 6	ditto	63	3 12 6
ditto	36	3 0 6	ditto	44	4 2 6
ditto	31	2 10 0	ditto	41	5 4 0
ditto	16	3 0 6	Trethellan	65	1 10 6
United Mines	101	4 15 6	ditto	53	2 15 0
ditto	84	5 2 6	ditto	37	1 11 0
ditto	83	3 2 0	ditto	30	4 7 0
ditto	80	2 19 0	St. Aubyn	78	1 13 0
ditto	75	5 16 6	ditto	57	5 17 6
ditto	65	2 11 0	Grambler	28	3 14 6
ditto	61	2 16 6	Treleigh Consols	68	6 12 6
ditto	56	2 4 0	ditto	39	2 17 0
Par Consols	116	3 13 0	Wh. Ellen	79	5 2 6
ditto	106	2 18 0	ditto	21	2 9 6
ditto	88	6 12 0	Andrew & Nanglies	41	4 2 6
ditto	84	5 4 0	ditto	3	2 14 0
ditto	65	5 10 0	ditto	43	5 4 0
ditto	64	5 3 0	Wh. Comfort	82	1 9 0
Tresavean	100	3 0 0	Wh. Mary Consols	72	4 19 0
ditto	98	2 7 0	Wh. Clifford	54	3 6 6
ditto	73	3 6 0	ditto	11	2 4 0
ditto	54	4 8 6	Wh. Sisters	33	3 7 6
ditto	51	1 6 0	ditto	31	3 16 6
ditto	48	5 1 6	South Wh. Fortune	50	3 15 6
ditto	46	3 0 0	Barrier	45	4 2 6
Perran St. George	78	2 11 6	South Tolgus	35	3 12 6
ditto	68	1 7 6	Treslow	12	0 15 0
ditto	52	2 4 6	Ting Tang	10	2 10 6
ditto	44	3 13 0	East Crinnis	3	4 11 6
ditto	21	5 10 0			

TOTAL PRODUCE.

Consolidated	934	£4091 15 6	Andrew & Nanglies	87	£400 16 6
United Mines	605	2304 4 6	Wh. Comfort	82	118 18 0
Par Consols	523	2435 10 0	Wh. Mary Consols	73	361 7 0
Tresavean	470	1458 1 0	Wh. Clifford	65	203 15 0
Perran St George / Bolenna	330	932 15 0	Wh. Sisters	64	229 19 6
			South Wh. Fortune	50	188 15 0
South Caradon	313	1750 13 6	Barrier	45	185 12 6
Treviskey	306	1242 8 0	South Tolgus	35	126 17 6
Trethellan	185	432 14 6	Treslow	12	9 0 0
Grambler & St. Aub	163	567 17 6	Ting Tang	10	25 5 0
Treleigh Consols	107	561 13 0	East Crinnis	3	13 14 6
Wh. Ellen	100	456 17 0			

Average Standard .... £ 90 6 0 | Average Produce 7⅝
Average Price per ton £3 19 0
Quantity of Ore .... 4562 tons. | Quantity of Fine Copper, 339 tons 5 cwts.
Amount of Money £18,098 9 6
LAST SALE.—Average Standard .... £ 81 17 0.—Average Produce 10⅛

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Mines Royal	141	£579 11 9
Vivian and Sons	1259	4480 14 0
Freeman and Co.	807	2920 13 3
P. Grenfell and Sons	516	2185 6 6
Crown Copper Co.	15	46 0 9
Sims, Willyams, and Co.	602	2405 9 0
Williams, Foster, and Co.	1222	5480 15 0
Total tons	4562	£18,098 9 6

Copper ores for sale on Thursday next, at Tyack's Hotel, Camborne.—Mines and Parcels.—North Pool 861—Camborne Vean 463—East Wheal Crofty 424—Wheal Seton 421—Tincroft 343—South Wheal Basset 278—Fowey Consols 253—Condurrow 240—Dolcoath 201—South Wheal Francis 200—East Pool 144—Wheal Bucketts 81—Great Michell Consols 57.—Total quantity of ore for sale, 3966 tons.

Copper ores for sale on Thursday week, at Andrew's Hotel, Redruth.—Mines and Parcels.—Carn Brea 828—Par Consols 350—Wheal Rodney 96—Wheal Tremayne 93—Wheal Agar 92—Wheal Jane 85—Wheal Prosper 52—North Wheal Basset 52—Wellington Mines 50—Great Work 42—Gwinear Consols 18—Trenance Mines 15.—Total, 1773 tons.

COPPER ORES.

The following are the purchasers at the Swansea sale of the 18th inst.:—

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Freeman and Co.	146	£1411 16 6
P. Grenfell and Sons	660	6609 15 0
Sims, Willyams, and Co.	321	4014 0 6
Vivian and Sons	831	7147 16 6
Williams, Foster, and Co.	1044	9792 15 0
Mines Royal	72	468 0 0
Schneider	160	2314 7 0
Total tons	[illegible]	£31,756 19 6

Copper ores for sale June 1.—Cobre 111, ditto 81, ditto 79, ditto 75, ditto 65, ditto 61, ditto 56, ditto 23, ditto 101, ditto 96, ditto 90, ditto 78, ditto 68, ditto 79, ditto 41, ditto 21, —Cuba 122, ditto 120, ditto 112, ditto 52, ditto 117, ditto 115, ditto 68, ditto 56, ditto 35, ditto 30, ditto 25.—Bearhaven 122, ditto 120, ditto 106, ditto 102.—Knockmahon 118, ditto 103, ditto 81, ditto 66, ditto 59.—Santiago 75.—Glasgow Slag 54.—Holyford 44.—Derrycaban 43.—Vine Slag 29, ditto 11.—Aberdovey 27.—Llanidloes 6.—Kapunda 29, ditto 21, ditto 11.—Total quantity of ore to be sold, [illegible] tons.

NOTICES TO CORRESPONDENTS.

It will at all times save much trouble, and frequently considerable delay, if communications are simply directed—

To the Editor,
Mining Journal Office,
26, Fleet-street, London.

Also, to avoid trouble, Post-Office Orders should always be made payable to William Samson Mansell, as acting for the proprietors.

"A. B." (Paddington).—The pressure at which the safety valve was loaded, in the coffee-roasting apparatus of the late unfortunate Mr. Dakin—2200 lbs. to the square inch, is certainly not common; nor could it be by any means requisite. We have made inquiry of more than one practical engineer, and are informed, that steam, at a pressure of from 100° to 150°, gives out heat sufficient to bake, or roast, meat, bread, pastry, coffee, cocoa, or any other substance; and, even below that pressure, it is not uncommon for the hemp and oil gaskins, or jackets, for coating the cylinder, dry wood in contact with the hot iron, &c., to catch fire, after some hours' working.

In our notice of the dinner given to Mr. R. Stephenson, at Conway, in last week's *Mining Journal*, for *cast*, read *wrought* iron.

THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, MAY 27, 1848.

In our columns of last week, we adverted to the Cost-book System, and the consequences of its non-observance; while the report of proceedings in the Stannaries Court, which appears in our present Number, fully bears out the observations then made, as to the necessity of a strict observance of the system—where such is adopted. In the case cited, the intent was, doubtless, that of carrying out the principle; but, unfortunately, it would appear, that even in the county of Cornwall—where it is only natural to assume that the system was not only understood, but would be carefully carried out—certain *laches* took place; which, however, will be rendered more apparent by the arguments adduced by counsel, in the course of the proceedings, and the opinions expressed by the Vice-Warden in charging the jury, and on the application for a new trial. The case appears to us simple, if divested of legal quibbles, and may be conveyed in a few words. A set, designated the "Mineral Court Tin Mine," was taken up, and Mr. Tippet, the defendant in the cause referred to, proposed taking up some three or four shares, or 256th parts; which, however, could not at the time be assigned him; but at the first meeting of the adventurers, the entirety of the shares not having been subscribed for, that gentleman's name was inserted in the cost-book as an adventurer for four shares; no evidence being produced on the trial of his acceptance of the same at the time they were appropriated. A resolution was on such occasion passed, to the effect—that the parties to whom shares were assigned, or who had expressed their willingness to become adventurers, should pay the call then made, within six days, or, in default thereof, should forfeit all claim, or right, thereto, or the advantages which might accrue from working the mine; it being clearly understood, that the adventurers who paid up the call made, had a right over such shares to appropriate them to other parties, or to merge them in the common fund, and so reduce the number of shares by increasing their individual interest. The defendant, it appears, did not pay the call within the limited time, and, consequently, did not accept the shares, or avail himself of the opportunity afforded him of becoming an adventurer; but subsequently committed himself, under circumstances which, we hold, cannot be designated otherwise than misrepresentation, as proved in evidence—having signed a bond, or guarantee, whereby it was contended, that he admitted being an adventurer, and, in such capacity, was sued for the recovery of a demand for the supply of a water-wheel, which formed the cause of action. From the evidence adduced, it appears, that the plaintiff, antecedent to the defendant signing the guarantee, which was afterwards cancelled, had sold to the adventurers the wheel in question; and had received, in payment of the same, the acceptance of the purser; which, however, was dishonoured, and, hence the action against the defendant. The report of the trial gives the result, that of the verdict of the jury in favour of the defendant, to which is appended the application for a new trial, which was granted. It is not for us, in the present state of the case, to offer an opinion as to the justice of the verdict, or otherwise; but as the matter involves a very serious question as to the liability of a party, who is assumed to have been an adventurer, although he had never accepted the shares assigned to him, paid the call required—the omission of which deprived him of all interest in the adventure, and who had, moreover, never attended a meeting, or signed the cost-book. We think the question at issue, and the decision of the jury on the second hearing of the cause, is a matter of the first importance, as teaching the out-adventurer what are the rules which govern the Staunary Court, and the principles of the Cost-book System, as if the latter be not clearly understood and defined, better were it that it was at once exploded. There is one important feature which must not be lost sight of—that of the whole number of shares, into which the mine was divided, not having been subscribed for; and hence, the greater liability imposed upon the several adventurers. We can very well understand that those who have paid their calls, may determine on carrying on the mine, as we have before observed, with a limited number of shares; but, in the absence of any meeting being convened, for taking the opinion of the parties, we think it absurd to suppose for a moment that any party can be considered as an adventurer, beyond his relative proportion, according to the number of shares, or parts, for which he may have subscribed. We are well aware, that every adventurer is liable to any creditor of the mine, to the full extent of his claim—at the same time, that if the Cost-book System be observed, and that every two months the accounts be placed before the meeting, the debts liquidated, and the amount provided for the next two months' contemplated expenditure, there can be but little risk—it is the non-observance of this course that we condemn.

However, to return to the question of the entirety of the shares not having been taken up—we will assume a case by way of illustration. We will suppose, an adventure, put forward with the view of working a sett, which is proposed to be divided into 256 shares, of which number only 64 are subscribed for. Under such circumstances, we would, in the first place, contend that the projectors are not warranted in prosecuting the working of the mine without first convening a meeting of the adventurers, and having their consent, either to reduce the number of shares, whereby their interest would be quadrupled—for such would be naturally the effect of working the mine with the reduced number of shares—or, in other words, allowing, as the Vice-Warden observed, the "untaken shares," or three-fourths being merged in those which had been subscribed for. We can well understand that such a course may be adopted, where the parties assent; but we contend, that any party subscribing for four shares, or 1-64th part of the mine, and taking upon himself the liability attached to such proportion, is not liable to pay four times the amount to which he would be subjected, in case only one-fourth of the number of shares were subscribed for, without having given his assent to such reduction in the number of shares, and, consequently, increase of the interest, previously held by him. In the case under notice, as already observed, a resolution was entered upon the minutes to the effect, that those parties who did not pay their calls within six days, should not be entitled to the shares allotted, or be considered as adventurers; yet, in the face of this, we find that the resolution so arrived at, is considered as nugatory, and the party named, as a holder, under the circumstances mentioned, is held to be liable—or, at least, such is the attempt—for obligations, or liabilities, entered into by parties with whom he was unconnected, and to whom he had neither delegated powers, nor did he recognise them as agents acting for him.

We will not further dwell on the subject, or dilate on the points mooted in the course of the proceedings—our object being alone to refer to the present case, as one affording strong evidence of the importance to be attached to the strict observance of the Cost-book System; for, we need hardly say, if questions of this nature can arise in Cornwall, where the system is considered to be understood and practised, what must be the consequence attendant on the assumed "Cost-book" *principle* adopted in London and other localities? It is an old adage, "that a word to the wise is sufficient."

The lamentable accident, recorded in our columns of to-day, in reporting the evidence at the inquest held on the late Mr. Dakin, whose death was caused by the explosion of a cylinder, involves several questions, to which much importance is to be attached. We have given the evidence at length, having carefully attended to the several points advanced by the scientific gentlemen who were examined on the occasion, and the practical engineer and workmen of the patentees. It is unnecessary to recapitulate the evidence, in however brief a form—our object being alone to draw attention to the conflicting testimony put forward by the witnesses, whose high standing would, were the evidence of any one individual taken alone, be considered conclusive, and on which, we doubt not, the jury would have felt warranted in giving a verdict in accordance with the evidence so afforded.

It is sufficient to name some of the parties examined, to give an idea of the importance attached to the inquiry, in a scientific point of view; while the absence of information, on the part of "one and all," on the most important features which the case presented, and the difference of opinion expressed on the part of gentlemen standing so high in the estimation of the world as men of scientific attainments, is well calculated to astound our readers as it did ourselves. The parties to whom we refer, as witnesses on the occasion, were Professor Farey, Dr. Ure, Dr. Ryan, Josiah Parkes, C.E., G. Nasmyth, C.E., A. M. Perkins, C.E. And it was only natural to assume, that with such a host of talent, the jury would have been readily enabled to have arrived at a verdict. Such, however, was not the case; and the announcement by the jury, that *they* could not express an opinion as to the real cause of the explosion, from the conflicting evidence of the scientific men, who had been examined in the course of the inquiry, is quite sufficient to cast a slur on the scientific world, or, at least, the gentlemen connected therewith, whose names we have recorded. To justify the expression of the jury, we may briefly observe, on one or two of the main points advanced by the witnesses—for instance, Prof. Farey contended, that cast-iron cylinders, to be applied to the purpose, should have had 10 times the strength or resistance to the pressure to which it had been subjected; while Mr. Josiah Parkes held, that it having been tested at 3000 lbs., it was equal to the pressure to which it was submitted of 2000 lbs., and that he should have had no hesitation in using the apparatus, assuming the casting to be perfect, which was the ground, or basis, on which Prof. Farey had expressed his opinion. The question of the application of cast-iron to a cylinder of the kind, subjected to a heat of 500° in the cells, or tubes, was a matter discussed, and on which a variety of opinions were given—Mr. Perkins, as one, condemning entirely the use of cast-iron, and advocating wrought-iron tubes, which latter form a part of his own patent. Again, as to the faultiness of the casting, we believe there could be no doubt, as to that portion of the cylinder where the explosion took place being unsound; but the evidence was of a conflicting nature, as to whether such could have been determined, or ascertained, simply by examination of the surface or skin of the casting. Another question arose, as to the mode in which the cylinder was cast, whether with a head or otherwise. Mr. George Nasmyth swore distinctly, that in the present instance there had been no head, and to which he attributed the explosion, from the imperfection of the metal, and which was also the opinion expressed by other witnesses so examined. It, however, appeared, from the evidence adduced on the part of the patentees, that the cylinder had been cast with a head; and in support of which the founder was examined, and the evidence of Dr. Ure, Dr. Ryan, Mr. J. Parkes, C.E., and others, were taken—so that in this, as in the other cases, there was evidence put, in which was directly opposed. The next, and, indeed, the most important, point of inquiry, as appeared to us, was the effect produced by getting up the heat of the water passing through the cylinders to 600° or more, when the brickwork in which it was enclosed, or surrounded, was in a damp or wet state, as was proved in evidence by the workman who had charge of the apparatus.

On this point, we have again conflicting evidence. Professor Farey distinctly stated, that the wet brick-work had no effect, nor was it the cause of the accident, which opinion was re-echoed by Mr. Nasmyth and Mr. Healy—while Mr. Perkins expressed his opinion, that the extreme heat was rather calculated to dry the brick-work and mortar by which the cylinder was surrounded. On the other side, we have all the witnesses produced by the patentees, embracing scientific and practical men, who declare distinctly that the accident was solely attributable to the uneven, or unequal, expansion of the two surfaces of the cylinder—the difference being created by the heat coming in contact with the damp materials, from which steam was formed, and subsequently condensed—while the surface was chilled and lowered to a temperature far beneath that of the interior of the cylinder. The real question appears to be—Do we understand matters of this nature? If we are to judge by the evidence adduced, the professors and engineers examined are in a state of blissful ignorance. We admit that, from all inquiries we have instituted, there is no data from which deductions might be drawn, or further information acquired, except the promulgation of theoretical ideas; yet, forsooth, it seems somewhat passing strange, that the gentlemen, whose names we have quoted, should have differed so widely on the several points brought forward. We have to request communications in corroboration of the one view or other entertained, as we consider that we shall by such means become the medium of communicating one of the most important results to the scientific world, as affects the strength and power of resistance to heat or pressure of one of the most important metals in general use.

The returns just issued by the Board of Trade, of the state of trade and commerce, during the three months, ended the 5th of April last, give a far more encouraging aspect of our industrial activity, than the convulsions which have so shaken Europe to its centre, within that period, would have led us to expect. While France has her industry paralysed, her workshops empty, and her trade and commerce entirely suspended—England is rapidly recovering from the shock, which she received by the pecuniary panic of last year; and, from all appearances, her commerce and manufactures bid fair for gradual and steady improvement. Consols—which in February were nearly up to 90, a week after the French Revolution—suddenly went down to 79, but have since gradually improved, notwithstanding Chartist demonstrations, and Irish sedition, and are now quoted 85. In the railway share-market, as also in other investments, there has been an increased demand; and, in consequence, an evident improvement in price: while on many of those lines of unfinished railways which were suspended during many months—among which we may mention the Oxford, Worcester, and Wolverhampton; Birmingham, Wolverhampton, and Dudley; South Staffordshire, Stour Valley, and others, the greatest activity prevails.

Notwithstanding that a great amount of severe distress did, a few months since, exist among the labouring classes, we have reason to believe, that the worst is over, inasmuch as in those articles—the consumption of which is thought to indicate, in a great measure, their condition—there is a considerable increase In the principal raw materials for manufacture, with the exception of silk and wool, there has been an increase in the imports, particularly in those products which it is more immediately our province to notice. In the quarter ending the 5th of April, 1847, as compared with that ended the 5th of April last, the importation of foreign copper ore was 6814 tons to 12,235 tons; bar-iron, 989 tons to 1966 tons; steel, 1518 tons to 2607 tons; spelter, 319 tons to 570 tons; quicksilver has fallen from 396,818 lbs. to 139,801 lbs.

In our exports there has been a decline, but which may be accounted for, from the convulsions which have shaken those continental states, in which many of our best markets were situated; neither is it to anything like the extent to which this state of things might have led us to believe it would have arrived; the whole decline is but 65,297*l.*—the total declared value for the first quarter in 1847 having been 11,343,117*l.*, and for that of 1848, 11,065,297*l.* There was, however, an increase in unwrought copper from 466 tons to 907 tons; lead (pig and sheet), 615 tons to 897 tons; spelter, 84 tons to 369 tons; tin, 2502 tons to 2953 tons; coals and culm, from 174,215*l.* to 245,604*l.*; and tin plates, from 98,944*l.* to 129,871*l.*

In the merchant shipping interest, the returns, as well as future prospects, are equally encouraging; the amount of tonnage cleared out the first quarter of 1847, was 947,840 tons; that of 1848, 1,039,051 tons. In the coasting trade, there was cleared outwards, in the first quarter of 1847, 3,177,773 tons; and in the corresponding quarter of 1848, 3,241,020 tons. Under all these circumstances, we feel justified in looking forward with hope to the results of the current quarter, and those which follow.

A most illiberal and ill-advised proceeding has just emanated from the Glasgow Chamber of Commerce, and one so convictive of ignorance as to what is passing around them, that were it not a well-known fact, we could hardly believe that chamber to be composed of a body of enterprising and intelligent mercantile men. We have already, a fortnight since, in our numerous remarks on the importance of the Eastern Archipelago Company, stated that they had obtained a Royal Charter, and described it as one which conferred no exclusive monopoly; but the principal privilege in which was to confine the liabilities of each individual shareholder to the amount of shares held by him. Notwithstanding these facts must have, for some time, been known to the mercantile world, we find that a memorial has since been presented by the Chamber of Commerce of Glasgow to the President of the Board of Trade, praying her Majesty's Government *not* to grant a charter to the Eastern Archipelago Company, whose proposed operations in Borneo, Labuan, &c., threatens the shipowners, merchants, manufacturers, and coalowners of that city, and districts around, with ruinous competition. Leaving entirely out of the question the ignorance, which led men to petition the Government *not* to grant a something already granted, there is a selfishness, an illiberality of feeling, and a perverseness of reasoning in this matter, which is really astonishing. Instead of a ruinous competition with Glasgow, or any other locality, the operations of the Eastern Archipelago Company, in the cultivation of sugar, tobacco, coffee, cotton, and spices, the prosecuting the working of the coal and metallic minerals, either in Borneo and Labuan alone, or in the islands of the Chinese Seas, or the Malay Peninsula, will open up a field for British enterprise and commerce, which may be successfully explored by individuals, or companies; and which will eventually, by the encouragement and furtherance of immigration, and colonisation, extend the resources of Britain, carry the civilising influences of her flag over a large extent of the eastern portion of the globe, and establish her commerce and her name on a secure and lasting basis.

Before leaving the subject, there is one more point which deserves notice—the remarkable difference which the spirit of this document breathes with one lately presented to the Board of Trade, stating that the interests of Britain required that she should not be entirely dependent on America for cotton—praying that Australia should be the new cotton-field—that means of emigration should be offered to the *surplus operatives of Glasgow* to cultivate it—and that the ships to carry them over should be taken *principally from the Clyde!* This petition, asking a most grasping monopoly for themselves—the other being against one to another company, where nothing of the kind was contemplated—evinces a feeling of utter selfishness rarely equalled, and the whole affair is disgraceful to an enlightened body of men in the middle of the 19th century.

In remarking, in last week's Mining Journal, on the question of the duty on foreign copper ore, we mentioned the fact of a vessel having arrived in the river from Rouen, laden with cake and ingot copper, without the slightest idea of the object or cause of her arrival. In another column will be found a communication, from a "Constant Reader," explaining that the copper in question is a consignment to France, which has been brought back in consequence of the absolute want of funds to pay notes of hand already due, much less ready cash, for the article—without which no more copper will be sent to France, until the outstanding paper is taken up, and full confidence restored, which, from the unsettled appearances of that unhappy country, we should expect will not be at a very early period. This circumstance, we must allow, has not arisen from any effect of the duty on foreign ore; but, we think, it furnishes an additional reason for its abolition. If the markets of Europe, from political convulsions, are for a time closed against our produce, it is no time to add to the calamity by the continuance of an obnoxious tax, which, by its annoyance, adds greatly more in proportion to the cost of the fine metal than it benefits the State. The true policy, under such circumstances, we think, is plain—give every facility for the production of the commodity in question at as low a cost as possible—that when a largely-increased demand again arises, which undoubtedly it will, we may be prepared to supply every market, and thus give a renewed impulse to the mining industry of Cornwall. In answer to a question, by Lord G. Bentinck, on Monday evening, who expressed a wish for a day to be named for the second reading of the bill, the Chancellor of the Exchequer replied that, from the number of motions before the House, he could not name a particular day; but it should be brought forward on the very earliest opportunity; but late last night, or, rather this morning, for it was past midnight, Thursday next was fixed for the consideration of the subject.

Some remarks will be found in an article in our present Number, as well as in that of last week, treating on the Cost-book System as applied or misapplied, understood or misunderstood, by in and out-adventurers. Entertaining but one opinion as to its merits and advantages, as we have already oft expressed, we now turn for a moment to the Joint-Stock Companies' Registration Act, under which the Wheal Curtis Mining Company has been conducted, and which is bankrupt, as appears by the accounts put before the meeting, held on the 25th inst., and briefly noticed in another column. It would appear, that the Cost-book System, not being considered by the projectors, directors, or adventurers, sufficiently clear and safe for the protection of those embarked, they thought fit, and wisely so, in their opinion, to adopt the "Act." How far they have observed the stipulations, or clauses, we are not prepared to say; but one point is manifestly clear—the company are in debt 2000*l.* The mine has been abandoned—or, at least, all the workings have been discontinued—and the agents and workmen scattered to the wind, without the "joint-stock registration" adventurers knowing one word about the matter. Could such a thing have been done by "directors" under the Cost-book System? We contend not. We are glad to find an instance like the present, which will, we doubt not, teach parties, by practical results, much more than we can ever be expected to result from preaching.

DEVIATION OF FALLING BODIES SOUTH OF THE PERPENDICULAR.

As long since as 1793, it was discovered that heavy bodies, in falling from great heights, in addition to the tendency to fall to the east from the earth's rotation, fell also greatly south of the perpendicular of the point from which they were let fall. All the experiments, however, hitherto made on this subject have only been from very moderate heights—from 200 to 500 ft. Mr. W. Rundell, the secretary of the Royal Cornwall Polytechnic Society, having made a series of experiments in the deepest shaft of the United Mines, which is upwards of one-quarter of a mile in depth, read a paper on the subject at the meeting of the society. As the value of such experiments must greatly depend on the method employed, it took some time and trouble to arrange the best means for allowing the body to fall free and without any horizontal impulse, and at length the following arrangement was adopted:—A strong rectangular frame was constructed, having a shelf or stage inside it, capable of turning freely on an axis near one end, supported by pointed centres fixed in the sides of the frame; this frame was placed in a horizontal position over the shaft, and held in its place by buttons; the bullets were placed at the extreme end of this shelf, with no other protection to prevent their falling off, than a hole bored in the wood. A plumb line was now suspended at each end of the frame due east and west of each other—a line drawn between them passing over the centre of the bullet rest; to these were attached heavy plummets, the lower ends pointed. After they had hung some hours, to give time for all vibration to cease, a line was drawn on the platform at the bottom of the shaft joining their points, which was taken as the datum line from which to measure the deflection. The number of bullets used was 48, formed of each of the following metals:—iron, copper, lead, tin, zinc, antimony, and bismuth; besides these, iron and steel plummets were employed, the latter magnetised, they were in the form of truncated cones, the ends being rounded; they were each suspended inside a cylinder to prevent draughts of air from affecting them; in half of the experiments the end of the shelf pointed to the east, and the other half to the west, and yet, in every case, the body fell from 10 to 20 in. south of the datum line. These, it is highly probable, are the most correct and conclusive experiments which have ever been made on the subject, and carry with them a conviction that there is a real deflection to the *south of the plumb line*, and that in a fall of one-quarter of a mile it is of no small amount. Mr. Rundell's opinion as to the cause of this singular phenomenon, which has hardly hitherto been attempted to be explained, is—that, if falling bodies be acted upon only by the gravitating and tangential forces, the plane in which any falling body moves will be indicated by two lines—one a line, joining the point from which the body falls with the centre of gravity; and the other, a line at right angles with this, forming a tangent to that part of the circle of latitude, which is situated in the falling body at the *instant it begins to move*. Taking the earth as a perfect sphere, and the centre of gravity as coinciding with the geometrical centre, this plane will cut the earth in a great circle, and is, of course, stationary, and does not rotate with the earth. Now, while a falling body is moving forward and downward in this plane, the point from which it fell is moving round in the circle of latitude, and the line joining that point and the centre of gravity lies no longer in this plane, but has described part of the surface of a cone round the axis of the earth—consequently, the falling body must be some distance outside this cone, and to the south of the vertical line passing through the point from which it fell. Mr. Rundell concludes, that bodies falling one-quarter of a mile in 9″ latitude 50°, would have a deviation south of the plumb line of 2·2 feet.

The Maesteg Iron-Works.—An examination of the members of this company, consisting of seven partners—Messrs. W. Stothert, G. Wood, J. W. Little, J. C. Spender, J. Rusher, W. H. Buckland, &c.—who carried on these extensive iron-works in South Wales, took place at the Court of Bankruptcy, Bristol, on the 19th inst.; but the court was principally occupied in receiving the proofs of debt against the joint estate, and proofs to the amount of about 67,000*l.* were received and admitted. Two claims, the one for 19,000*l.*, and the other for 6000*l.*, were adjourned until the next sitting. A few proofs were also admitted against the private estate, after which the last examination was adjourned to the 29th June, the bankrupts' balance-sheet not being ready. We are enabled to add the following interesting particulars of the affairs of the company:—The trade debts amount to about 70,000*l.*; liabilities on notes given to partners in the hands of other parties about 13,000*l.*; rents, galeages, wages, and salaries, about 4000*l.* The company having got into difficulties, the works, it appears, were carried on for 12 months under a deed of inspectorship, which expired on the 25th March last, and by whom the furnaces were blown out, prior to the bankruptcy, and which cannot fail to have the effect of very much deteriorating the works. Two days after the inspectorship expired a fiat of bankruptcy was taken out, which is dated the 27th March, Messrs. Sewell and Fox, of Old Broad-street, London, and Messrs. Whittington and Gribble, of Bristol, as their agents, being solicitors to the fiat. A meeting for the choice of assignees having been held, Messrs. Renshaw, of London; Hampton, of Maesteg; and Mr. C. B. Fripp, jun., of Bristol, were chosen assignees; and Mr. E. M. Miller, of Bristol, was appointed official assignee, by whom the accounts have been investigated; and the following may be taken as a statement of the available assets:—Value of plant, at cost price, 52,000*l.*; horses, tools, &c., about 4000*l.*; stock of minerals, about 5000*l.*; manufactured stock, about 2000*l.*=63,000*l.* The company have a claim against the Vale of Neath Brewery Company, of which company they were partners, for nearly 70,000*l.*, for which they hold bills for cash advances. Should the works realise anything like a remunerating price, and the brewery company make a favourable arrangement, the creditors will receive a good dividend. The official assignee has paid nearly 1000*l.* to the workmen, to whom a very large sum is due for arrears of wages, the statute only allowing 40*s.* to be paid to each workman in full. The creditors have, however, been applied to to consent to the official assignee's paying all the workmen in full, and there is no doubt but that they will consent to this arrangement.

The Tubular Viaduct over the Conway.—Mr. R. Stephenson, in the course of a speech which he delivered at a dinner given to him at Conway, to which we referred in our last Saturday's Journal, spoke as follows on the subject of tubular bridges:—"He felt that it would not be inappropriate in him succinctly to detail a few facts relative to the tubular bridges. It was about six or seven years ago that he had first conceived the notion; and the result, when that notion was promulgated in the proper quarter, was the proposed adoption of the plan on a small and experimental scale, but under the provisions of an Act of Parliament, which put so many limitations, and clogs, and fetters upon the undertaking, in the very first instance, as to render it utterly impracticable. It was on the Northern and Eastern Railway, and was to have been of wrought-iron; but the expense of that material, as compared with cast-iron, was another insuperable objection at that time. The notion of throwing a cast-iron viaduct of arches over the Straits was next taken into contemplation; but against this (whether correctly instituted or not, it was not his province to say) there had been such formidable opposition that the scheme had been withdrawn. Then followed a grant for constructing a cast-iron tubular bridge over the Straits, under such conditions and limitations as would effectually prevent the completion of the project. Being thus, to use a proverbial expression, driven into a corner, he had nothing left but to revert to the original idea of a tubular viaduct, composed of wrought-iron plates; and that idea had subsequently, as they had seen, been carried out into practice. When first the notion was mooted before a Parliamentary committee, an incredulous glance of the most marked and unmistakable character was turned upon him from every honourable member. That glance he could never forget, but it did not weaken his conviction. He saw the practicability of the plan, and stood to it. Experiments took place, by which to test and develope all the essential data and conditions. In these experiments he had had the able assistance of Mr. Fairbairn and Mr. Hodgkinson; and the realised matured result of their joint labours was now to be seen under the walls of their venerable castle."

The Export Coal Trade.—The official returns of exports, furnish, we are happy to perceive, satisfactory evidence as to the improvement of our export trade in coal—the declared value of that article having increased during the three months ending April 5, 1848, to the extent of fully 40 per cent. as compared with the corresponding period of 1847. A period of three months, however, is perhaps too small on which to found any sound calculations as to the state of trade; but, on examining the returns for several months past, we find that a steady improvement has been going on, the following having been the total annual values during the last two years:—Year ending April 5, 1847, 926,084*l.*; year ending April 5, 1848, 1,047,766*l.* It is true that, in 1845, very large shipments took place, the declared value for the 12 months ending April 5, 1846, having amounted to 1,031,700—a sum, nevertheless, which has been exceeded by the exports of the year ending the 5th of April last. This fact, we repeat, affords satisfactory evidence of improvement.—*Gateshead Observer.*

Stop-cock for Corrosive Fluids.—Mr. J. Robb, of Haddington, has invented a stop-cock, which is intended to obviate that tendency to stick fast, as the plugs of all the common kind, especially when the fluids are of a corrosive or drying nature, such as common gas; and as it will have no tendency to leak, it may be employed with advantage in oil, beer, or water casks. Its principal peculiarity consists in using vulcanised India-rubber tubing, connected with the pipe by screw couplings, and compressed by means of a screw, to any extent required, by which the flow of gas, or other fluid, may be regulated at pleasure. It may be made of any form, either plain or ornamental, besides being cheaper for large sizes, and easier repaired than those used at present.

MESSRS. CLARKE AND VARLEY'S PATENT APPARATUS FOR RAISING WATER FROM DEEP MINES.

We have been favoured with a view of some drawings of an ingenious and novel arrangement for raising water from mines, or other deep places, which, we think, promises to be highly effective. By it the ponderous and expensive pitwork, necessary under the present system of unwatering mines, will be entirely superseded, and engines of much less power be equally effective, as the enormous friction inherent in the pumps now in use is avoided. The plan under notice is on the principle of atmospheric pressure, but unconfined by the law of hydraulic forces, by which the pressure of the atmosphere can only support a column of water 33 ft. high; whereas, in Messrs. Clarke and Varley's plan, the depth may be 300 or 400 fms., and the effect will be the same, excepting as to the time in which a certain quantity of fluid is raised. The apparatus merely consists of a tube of plate iron—galvanised, or coated with zinc, to prevent corrosion. One-eighth of an inch would be sufficient as to strength; and it might be (say) 2 ft. diameter, extending to the bottom of the shaft. The tube is rivetted together in lengths of 30 ft., and then bolted by flange joints—the joints between the several lengths being carefully made, so as to be air-tight. The top of this tube terminates in an air-tight cistern, communicating with an air-pump, worked by a steam-engine, or other power; at the bottom of this cistern is a valve, to allow the water to escape when raised. The bottom of the tube extends nearly to the surface of the water in the sump, and is furnished with a piston, or diaphragm, sufficiently heavy to fall to the bottom by its own weight. From the bottom of this main tube, and beneath the piston, a smaller tube bends upwards, of sufficient height to be out of reach of the water, and provided with a valve; and, from a point, just above the piston, another pipe descends some feet into the water, which completes the arrangements. The *rationale* of the plan is this:—On exhausting the air from the cistern and tube, the water will flow in above the piston to a height corresponding with the state of exhaustion, or which may be regulated by the periods of opening the valve in the air-pipe. Suppose a column, 20 ft. high, has flowed in, when the valve in the air-pipe below being opened, the atmospheric pressure immediately forces up the piston, with its load of water above; and as the exhaustion continues, it quickly arrives at the top, overflows into the cistern, and, the exit valve being then opened, runs off through the channel prepared for it. The equilibrium being now restored, the piston falls to the bottom by its own gravity—such fall being regulated by the admission of air at the top of the cistern; the cistern valve and the air valve are now closed, when the operation is repeated, and goes on, *ad infinitum*, while the air-pump is kept at work. It will be seen that, after the first rise of water from the sump, due to the exhaustion, which we have taken at a 20-ft. column, the hydraulic principle is at an end; and, on admitting air below the piston, the water is lifted the same as any other heavy body might be in the tube—in fact, it becomes a close atmospheric railway tube, with its load inside. A tube, 2 ft. diameter, presents an area of 452 square inches; and, supposing one exhaustion in a deep mine could be made per minute, a 20-ft. column would give about 440 gallons per minute, which is above the average work of the largest Cornish engines. By increasing the area of the tube, any amount of water may be raised in a given time; if the pipe was 3 ft. in diameter, then 880 gallons would be raised at each exhaustion. One important feature of this invention is, that the water may be raised with any velocity, as its speed is never checked from the time it is set in motion till it is emptied into the cistern at the top. In an economical view, the saving would be enormous; in a shaft, 300 fms. deep (equal to 1800 ft.), such a tube would weigh 40 tons, and, at 25*l.* per ton, would amount to 1000*l.*, which, with the exception of the cistern and fixing, would be the whole cost. The timber work required in the pit to support the tube would be very slight, as it would have only the weight of the tube to support—the water being supported by the atmosphere. This plan is equally applicable to underlaying shafts, and to shafts that are sinking, as ample provision is made for that purpose; also for preventing stoppage to the machinery, in the event of the shaft becoming flooded. The wear and tear, and cost of maintenance, will be very little, as there is only one piston for the deepest mine; and the wear and tear of that is comparatively trifling—it being simply a partition, or diaphragm, to keep the water compact. The liability to derangement is also very little—there being only the piston and one valve at the bottom, which valve is small, and not at all liable to get out of order—being in the air-pipe, and not affected by the water. The piston may be taken out at any time, when required, and replaced by a new one in a few minutes. Sand, grit, or any other substance, will not in the least injure its perfect working, as it will be carried up with the column of water, without the possibility of clogging the valves. The engine, or water-power, may be at a considerable distance from the pit's mouth, and may be made to unwater several pits at the same time. In some situations, water-power may be employed, which could not be made available under any other system. All the valves are self-acting.

The failures hitherto, in all the attempts to raise water by atmospheric pressure, have been occasioned from the complexity of the apparatus employed, and the impossibility of preventing leakage. In this plan, there would be no leakage, as the several lengths of sheet-iron would be securely rivetted together, and the piston would always be sealed by the water upon it—while whatever pressure existed on the tube would be counterbalanced by the atmospheric pressure outside. We shall be happy to hear of the principle being practically tested—as it appears to us, after much careful consideration, to possess considerable merits, peculiarly its own, and it is evidently founded on true mechanical principles.

Progress of Mining in Spain.—In the Journal of the 6th instant, we inserted some remarks on the endeavours of the Spanish Government to encourage, by the most liberal measures, all persons, either native or foreign, in the exploring and working of minerals. It appears that these measures have not been in vain, and many individuals, as well as companies, are availing themselves of the new code of regulations, published by the Government. In March and April, no less than 24 setts have been granted and registered; 16 applications remain yet unregistered, and three old worked-out mines have been returned. Of these, 5 are copper mines, 28 lead, 3 iron, and 1 coal. The lead of the south of Spain is rich in metal, and upon an average, sufficiently argentiferous to pay the cost of smelting. The quantity exported from the southern ports in the year 1847, was—Adra, 24,555 quintals; Aguilas, 8195; Alicant, 5972; Almeira, 41,786; Carthagena, 1341; Port Mahon, 1329; Mazarron, 85; Motril, 7893; Motril-y-Almeira, 891; Roquetas, 649; San Felin, 622; Valencia, 693; and Villajoyosa, 1100 quintals; being a total from the southern ports alone, of nearly 5000 tons; besides which, large quantities are shipped from the northern ports for England, France, Belgium, and the north of Europe. Mining enterprise in Spain is rapidly extending, and new establishments are in course of erection for returning the ores, and the introduction of dressing machinery on the Cornish methods. Don Elorza, commandant of the artillery, has left Madrid for Truvia, for the purpose of commencing the smelting of iron ore, which abounds in that neighbourhood, in blast furnaces of English fashion, which are being constructed on the spot, at which the coal of the Asturias will be easily available: Don Elorza is a man of some celebrity, and has devoted much of his time to mining pursuits; and it is to be hoped this first attempt at iron smelting, on a large scale, will prove successful and profitable. The object of fixing on this spot is the establishment of a foundry and iron manufactory on a large scale, at which it is intended to produce every description of iron for building, with fire-arms, cannon, and projectiles for the artillery, with all their requisite materials, carriages, &c. The shops will contain every kind of machinery for boring, turning, planing, &c., and will be made a complete engineering college for the study of youth intended for the engineers and artillery corps. It is looked to with great interest in Spain, as tending greatly to develope the engineering and scientific talent of the country.

Importation of Tin from France—A Poor Speculation.—On Monday week, a French vessel arrived at this port from France, having on board from 40 to 50 tons of tin ore—or rather ore that was supposed to contain large quantities of tin. We understand that a gentleman from this neighbourhood, it may be in connection with other parties, having visited the coast of Brittany, fancied that the sand along the beach there contained abundance of tin; and in that belief the above-mentioned quantity was purchased, and shipped hither in the hope of realising a handsome remunerating profit. Considerable interest was manifested here in reference to the result of the analysis of this novel importation. But the speculation has, we are informed, turned out a complete failure. In a portion of the samples tried there is not half a ton of tin in as much as the ship would carry! But in a small sample of a better description, very little of which, however, was imported, there were better appearances—nothing however, like sufficient encouragement for another venture.—*Penzance Journal.*

New Ball Stop-cock for Water Cisterns, and a Nose-cock for Casks or Vats.—Mr. D. Erskine, gas-fitter, of Edinburgh, has invented a new ball-cock, which consists of two flat surfaces ground air-tight, having port-holes for the water when in certain positions, and furnished with a spiral-spring, which keeps the surfaces in contact. This spring is screwed down to the pressure of the water that it is fitted for; and as the water tends to lift it off the face, this gives it slight friction on either side, and it is not so liable to get fixed as the present ball-cocks are. The same kind will be of great advantage for gas-works, distilleries, and breweries, where large nose-cocks are required, and will be much less expensive.

Original Correspondence.

VALUE OF THE NEGLECTED ORES OF MUNDIC.

Sir,—In the paper of M. Sinding's, on mundic and its uses, which appeared in the last Number of the *Mining Journal*, is a powerful confirmation of the ease with which steam effects the separation of sulphur from minerals. The frequent recourse which has been had to sublimation, the varied success that has attended its application, and the low produce thereby obtainable, prove, incontestibly, that it is not adapted for the production of large quantities of sulphur at a cheap rate; while the trials of M. Sinding, though undertaken with the view of improving the sublimatory process, point to steam as the only agent by which it can be permanently established. Throughout his experiments, the moisture from the fuel and the furnace, being converted into steam, and carried, with the vapours of combustion, over the heated ore, decomposed it, with the production of oxide of iron and sulphuretted hydrogen gas, in such abundance as to render the presence of the latter very objectionable. This gas exhibited itself contemporaneously with the sublimation of the sulphur—clearly evidencing, that the heat necessary to its production, is not greater than that required to drive the sulphur from the ore; and, while the greatest amount, capable of being obtained by this process, is not more than 16 or 17 per cent., decomposition by steam would give the whole, or 53 per cent., leaving the ore in a better condition, and free the sub-sulphate, which usually attends the common calcining methods. The plan employed to bring the sulphur, in the sulphuretted hydrogen, again into the solid form, is a simple and natural operation; merely requiring, that the admission of air to the furnace should be so regulated, as to convert one-third of it into sulphurous acid gas; which, by combining with the remainder, would cause mutual decomposition to take place, and the sulphur from both gases to be deposited. Had advantage been taken, by M. Sinding, of this plan, and a due supply of air admitted to the sulphuretted hydrogen formed, the inconvenience, arising from this gas, would have been overcome, and the per centage of sulphur necessarily augmented.

The immense quantities of sulphur which are annually wasted at the various metallurgic establishments of this country, and the extensive deterioration of atmosphere consequent thereon, and the practice of resorting to foreign countries for our supply, when such vast beds of ore, capable of yielding it at a cheaper rate, remain untouched, is a disgrace to a commercial community.—John Howson: *Cornhill, May 25.*

OXIDE OF ZINC AS A PIGMENT.

Sir,—In your last Number, Mr. Leighton suggests the use of oxide of zinc, ground with oil, as a first coat for iron ships' bottoms, to be afterwards covered with oxide of copper, also ground with oil. It having also been suggested, that oxide of zinc might be advantageously employed as a substitute for while-lead, allow me to call the attention of those of your readers, to whom the subject may be interesting, to the fact, that in 1839-40, small works were erected, for the manufacture of zinc, on a model scale, under a patent then recently obtained, which, after many months' trial, at great expense, were abandoned as a failure. The oxide of zinc obtained in the first steps of this process, in the shape of a very light, impalpable, bluish white powder, was proposed to be ground with oil, and used for paint, as a substitute for white-lead, in the preservation of wood, iron, &c.; and samples so prepared were sent to Mr. R. Mallet, of Dublin, for test and analysis, who had a portion used on iron, simultaneously with white-lead paint on other similar pieces of iron. After several months, the specimens were subjected to careful examination, which was decidedly in favour of the white-lead. The several pieces of iron, painted with zinc (and, if my memory serves me, some were tested in sea water), were all, more or less, corroded, and the zinc paint peeled off; while the lead paint had remained entire, and the iron was preserved. The idea of employing the oxide of zinc as a pigment was then entirely abandoned by the parties. I call these facts to mind, by no means to prevent inquiry and research, but for information, and to prevent misapprehension. What effect the use of the two oxides (zinc and copper), as suggested by Mr. Leighton, would have, experience alone can tell; but it appears, I think, reasonable to suppose, that a galvanic action would ensue, which would eventually destroy one or both the coatings, and leave the iron bare.—H. B.: *Swansea, May 24.*

BORING BY STEAM.

Sir,—As several communications have lately appeared in your valuable columns, relating to boring for water, minerals, &c., perhaps, you will find room for a short description of a plan, which I have patented. The machine consists of a small double or single-acting cylinder, mounted on a cast-iron frame, and hung on gudgeons, so as to vibrate in any direction; there are two slots in the framing—one on each side, to allow the cylinder to be raised, or lowered, as required. The piston-rod, which is attached to the piston, is made hollow, through which passes the boring-rods. On the bottom of the piston-rod is a collar of some elastic material, screwed up tight, through which the rod passes, and has sufficient grip to raise the rod with its load; but the momentum given, on the descent of the piston, is sufficient to throw the borer with great force into the rock below. On exhausting the air from the upper part of the cylinder the piston is raised, and, on admitting air, it descends by the gravity of the boring-rods, &c. In applying this machine to underground work for mining excavations, I intend to work it by exhaustion by air-pumps—a small pipe, partly flexible, conveying the power from the engine at work on the surface, to any part where the machine may be required to work in the mine. But for applying this machine for boring wells for water, or boring holes for blasting in stone quarries, railway excavations, &c., I shall employ steam direct from a steam-boiler. This machine will bore holes, drive wedges, break up stones, excavate hard ground, either in a vertical, horizontal, or any other position, and be moved about with the same facility as a common hand barrow. In excavating stratified rock, or colliery work, I propose to place several of these machines along side of each other, and attach a rammer to each piston-rod, instead of boring tools. Wedges are then inserted in the fissures of the stone (or in holes previously bored for them), and driven in by the machines, cleaving off large masses at once. In other situations, instead of rammers, or boring tools, I should use tools with points like pick-axes, or spades, to break up the ground—the machine having a progressive motion at the same time. This machine is now fully matured; I have tested it, by numerous experiments, for the last two years, and I am fully prepared to apply them to any purpose where they may be required. They are applicable to every description of rock or hard ground, and may be employed in any situation. Thomas Clarke.

Blackwall, May 24.

THE COST-BOOK SYSTEM.

Sir,—Your observations, last week, on "the non-observance" of the Cost-book System, by persons, or by companies, who start with professions of founding their enterprises under such system, but who so rarely fulfil their professions in that respect, are both excellent and pointed. The great obstacle in mining enterprise, is the want of confidence in the parties who have the immediate superintendence of affairs. Nothing is more common than to hear of the delusions, deceits, and misrepresentations, which have been practised upon the enterprising, who have embarked in mining. I have observed with pleasure, that you are always ready to expose such delusions and deceits, when discovered; but the misfortune is, that in nine cases out of ten, the evil is not ascertained until past all remedy; and, without fault on your part, the deluded are warned a day too late for their own satisfaction or preservation. Moreover, although such lessons ought to be full and sufficient warning to all adventurers to mind what they are about, it is still a glaring fact, in the history of the present day, that while "it has become the rule with mining adventurers, boldly to set out in the prospectus, *carried on under the Cost-book System*," "several of the conditions, laid down for the government of the company, are directly opposed to the principles on which that system is based."—Yes: "the adventure is carried on with but a slight (and, in some instances, no) exception from the Scrip System, which holds out so many temptations to dishonest dealing," and thus, "*the security which the true Cost-book System affords the adventurers is not attained, but an imposition is practised under assumed legal protection.*"

These are excellent remarks, and too truly are they corroborated by the unfortunate results of frequent occurrence. No person, with an inclination to embark in mining, should adventure his money except with parties in whom he has perfect confidence; or who, at all events, will act up to their professions, by literally and systematically carrying out the Cost-book System, as recognised by the 64th clause of the Joint-Stock Companies' Registration Act. Nothing can be more satisfactory than your observations—that "the system, if observed, is one of the most secure, as applied to the employment of capital by a body of persons, affording them protection from loss, and a power being given them to avoid further liability, or cost."—re-

ceiving their fair proportion of the value of the ore raised, the machinery, and balance of cash in hand, *at any time when the adventurer may be desirous of retiring*,"—and it is perfectly true, "that it may be used as a cloak for the grossest abuses, if the rules be not strictly observed." The mines are, in fact, too often involved in debt by "parties taking the financial matters in their own hands." All such companies should insist upon your excellent advice being followed to the letter—for no satisfaction, no safety, can otherwise be *assured* to the adventurers. That mining enterprise, if honestly carried out, is both honourable and remunerating, need not be asserted here—no other enterprising interest pays better. But it has rarely had *fair play*. The errors, the deceptions, and iniquities of adventurers, have too often been visited on the *mine*, and not, as they ought, on the *men*; and it is, moreover, too often forgotten, that the remedy, if remedy there be, will be found in a better organisation of the management. The seed must be cultivated rightly, or it will produce no fruit. And, while I do most cordially agree with you, that the Cost-book System is the most *simple, economical*, and *just* mode, of management that can possibly be invented, we do also as cordially agree in the natural conclusion, that a cost-book in *words*, and not in *deeds*, is only a cloak for delusion and imposition. Let the enterprising know *their men*, before they part with *their money*, and then all will be right.—MALLET: *London, May* 24.

SOFTENING HARD WATER.

SIR,—The principal wells in the vicinity of London, which are sunk only into the body of the London clay, produce, it is true, a brilliant spring water, but not the best adapted for domestic purposes, owing to its being rendered hard by sulphate of lime held in solution. Dr. Clarke, of Edinburgh, recommends, as a remedy, that the water companies should employ *milk of lime*, which, he states, would not add more than 1d. per house, per annum, to the rate; and save to the inhabitants an enormous amount of money, now obliged to be expended in soap and soda. Having a deep well, producing an unlimited supply of brilliant water, of which I use a great deal, and which is subject to the above objection, I should feel greatly obliged by some of your chemical correspondents informing me, how such milk of lime is to be obtained and employed on a large scale; and whether it is the best remedy for softening water, rendered hard by the presence of sulphate of lime? Perhaps your able correspondent, Dr. Murray, to whom I have, more than once, been indebted for valuable information, would enlighten me on this subject.—A BLEACHER: *Lee, May* 25.

REFORM OF THE PATENT LAWS.

SIR,—I agree with your correspondent, Mr. Campin, that, when divested of fees, forms, and ceremonies, the Patent Laws "are as good as any in existence; but, practically, these are part of the law itself, and which render its operation oppressive in the extreme. Why should such heavy fees be exacted from men whose labours and researches would, if society were rightly constituted, confer blessings on all mankind? but, if such exorbitant fees *must* be paid, why should they not go to the public fund, and be applied for public purposes, instead of going towards enriching a class of men, who are of no more real use to society than so many owls?

One would have thought that the years of mental toil and exertion, in acquiring such a knowledge of practical science, as shall enable an inventor to reduce an idea to a practical reality—the sleepless nights, and half-foodless days, the sacrifice of health, and of almost every physical and social enjoyment—were sufficient penalties for men to pay; and inventors, at least, know that this, and much more, is paid for the privilege of benefitting mankind.

But no—the law practically says, that if inventors seek any return for their large outlay of time and talent, they must first pay to a useless set of men an exorbitant fee of several hundred pounds. What base and cruel injustice! Where are the inventors, who, after devoting perhaps nearly a lifetime in bringing their inventions to maturity, have 300*l.* or 400*l.*, or even so many pence?—and, being themselves poor, their circle of friends and acquaintances are necessarily, likewise, poor and limited. Something, therefore, should be done to obtain an alteration in the existing law; and, in my opinion, a vigorous effort should be made to strip it of these accursed fees, and to render it simple, intelligible, and certain, in its operation. But, if it be generally considered that this would be attempting too much, I shall be quite ready to co-operate with Mr. Campin, or any other friend of reform, who seeks such a modification of the present law as will render its operation less oppressive; and I think the establishment of the association alluded to by Mr. Campin in your last Number (and, for the carrying out of which, you, in the preceding Number, kindly proffered your assistance), would, independent of the many advantages which, if properly conducted, it might confer on inventors, and the public generally, be one of the best means of giving effect to the proposed petition of Mr. Campin.—JOHN WESTON: *Portland Town, May* 24.

OLD COLLIERY AND OTHER MINE PITS.

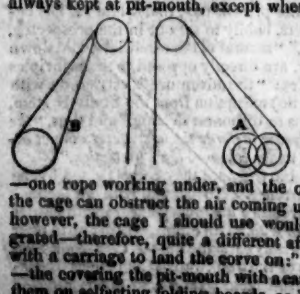
SIR,—Among the numerous (I might say, *innumerable*) fatal accidents which take place in mining districts, for the majority of them never come to the knowledge of the public, many are occasioned by old and abandoned pits being left wholly unprotected, and into which the unwary passer-by, or children playing in their vicinity, are precipitated—often without the slightest aid at hand; and, even if there should be, it is likely to be of little avail, as immediate death has most probably been too certain. Surely, there ought to be some measures adopted to remedy this crying evil, by compelling the owners of mining property, on the abandonment of a shaft, either to fill it up, or so to surround it with a strong post and rail fence, that its position might at least be indicated, and thus afford security against accidents, either to human beings or cattle. The neglect to adopt this simple and inexpensive course, should subject owners of mining land to such heavy fines, as would make it to their interest not to neglect the security of an abandoned shaft for a single day. A SUFFERER.

Walsall, May 23.

COAL WORKINGS, &c.

SIR,—I would not trouble you at this time, were it not that, in a former letter, I rather appeared an advocate for conducting mining operations, as well as ventilation, entirely by one pit, in cases where the inflammable gas was not particularly troublesome. I may remark, as I did before, no one would prefer ventilating by one pit, in preference to two. I am quite aware of the great advantage; but where the ventilation can be carried on quite safely by one pit, it is certainly an unwarrantable expenditure for an agent to shank a second, if only wanted for that particular purpose.

I quite agree with Mr. Sutcliffe, that "every coalmaster and agent should be watchful of the miners' comfort, so far as they reasonably can;" and if I do not quite agree with him, in his objections to ventilation, &c., being carried on by one pit, it may possibly be right of me to give my reasons for so doing, and shall here reply to objection 1.—The descent and ascent of the collier: I am in the habit of going regularly down winding-pits, where furnaces are placed at bottom; and must say I feel very little inconvenience by such.—2. The men at bankhead are certainly a little exposed to whatever nuisance the smoke, &c., may be; but again, that is not much where the scaffold is higher than the pit-mouth.—3. I never saw a pit the worse for a furnace, therefore can say nothing about loss on that head. I was always in the belief that a rope, working in an upcast pit, with a furnace, was seriously damaged by the heat; however, it does not always hold good; for, lately, I had a capital opportunity of testing such—the one-half of a pit being used for intake air, and the other for the return; the ropes were put on together, did equal work, and truly wore like fellows. However, I might remark, that the rope in the rise, or upcast, side was always kept at pit-mouth, except when the winding was going on. In



speaking of ropes, I would here remark, to make them both coil over the drum, instead of one going under, is a greater saving than by keeping the heat off it. The two systems can be compared by examining the annexed sketch. A shows the drums fitted on separate shafts, and B both on the same shaft—one rope working under, and the other above.—4. I do not see how the cage can obstruct the air coming up, more than the air going down; however, the cage I should use would be open in the bottom, at least grated—therefore, quite a different affair from "covering the pit-mouth with a carriage to land the corve on:" that, I would say, is objectionable—the covering the pit-mouth with a carriage; why not use cages, and lane them on self-acting folding boards, as is the general practice? Lastly, in case of an explosion, the nearer the collier is to a pit-bottom the better. *Query*—Which of the pits would be the best to make for, suppose he was at a point equal distance from either?—N. B.: *May* 22.

NOVA SCOTIA IRON COMPANY.

SIR,—Some time since (I think about December last), during a correspondence in your valuable columns on the subject of Sir T. Lethbridge, and the offer of Mr. Radley to smelt his iron ores, Mr. R. Mushet emphatically denied the possibility of converting rich hematites into steel of good marketable quality, by reduction and fusion only, without the necessity of smelting, puddling, rolling, and cementation, as is the common practice. Now, Sir, in the *Mining Journal* of the 6th inst., there appears a letter from Mr. Mushet, proselyting the cause of the "Londonderry Iron Company," offering to "convert hematites into steel by simple fusion," and to convince any "doubting steel maker" of the "ease and facility by occular demonstration." In December, Mr. Mushet avowed receiving three letters (since 6th October, 1847) from Sir T. Lethbridge, in which it is evident the baronet sought his opinions on the particulars divulged by Mr. Radley; and, perhaps, Mr. Mushet will favour your readers with a solution of this anomalous fact—that, previous to this suspicious communication with the baronet, he denied the possibility of making steel at one operation; but since, on being applied to by the Londonderry Mining Company, he publicly asserts in your columns, that he is going to astonish the veteran steel makers of Sheffield, by manufacturing steel equal to foreign from the hematites by simple fusion. There does appear to me something wrong—something mysterious in this business; and, as the centre of a considerable circle of intended shareholders in the Londonderry Mining Company, who are capable of appreciating the richness of the ores, and the value of the property, I shall certainly keep aloof, until my mind is satisfied as to the originality of Mr. Mushet's ideas, or his non-connection with the company; as, if we are to make steel by simple fusion, let the inventor reap his due reward. GEORGE PHILLIPS.

Old Broad-street, May 20.

ANDREW SMITH'S IMPROVED BLOCKS AND SHEAVES.

SIR,—I herewith send you a sketch of my improved sheaves and blocks, for which I beg that you will be kind enough to find a place in your scientific Journal. I have enclosed you a copy of a letter which I have forwarded to the Lords Commissioners of the Admiralty, along with the different specimens of my improvements therein mentioned, which were deposited in the Model-rooms of the Admiralty at Somerset House. I am glad to perceive that the Admiralty, and even the mercantile marine, are now extensively adopting my improvements. ANDREW SMITH.

Patent Galvanised Iron and Wire-Rope Works, Mill Wall, Poplar, May 24.

Fig. 1.

Fig. 2.

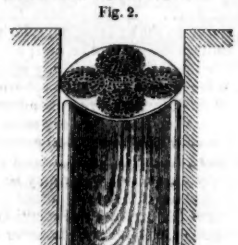
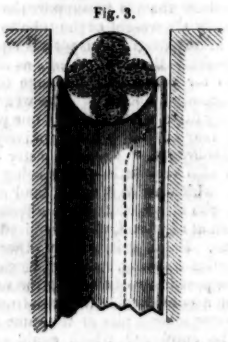
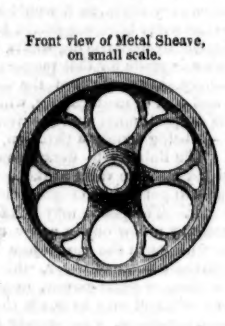


Fig. 3.



Front view of Metal Sheave, on small scale.



To the Hon. Sidney Herbert, M.P., Secretary to the Admiralty, &c.

SIR,—I have to request that you will be pleased to lay before the Lords Commissioners of the Admiralty the accompanying improvements in the construction of sheaves for ships, blocks and stroppings for same, as also thimbles for ropes. The sectional sketches, *figs.* 1, 2, and 3, with the accompanying specimens, from Nos. 1 to 6, will make the improvements apparent. The two pieces of hempen rope having been working the same length of time, and with the same quantity of weight suspended—the one over the ordinary wooden flat-grooved sheave, *figs.* 1 and 2, and the other on the improved semi-circular grooved iron sheave, *fig.* 3—fully demonstrate that a tackle-fall rove into a set of blocks with the improved sheaves will ensure the rope's lasting considerably longer, and retaining its natural round form, instead of being compelled to take the flat-distorted form of the groove in the ordinary wooden sheave, which is the case when a rope gets wet, and is under a strain, tending not only to weaken the rope, but to choak and split the block. The improved iron sheaves are not heavier than the ordinary wooden ones, of equal strength—are cheaper in the first cost—will last much longer, and are not liable to warp, and, when galvanised, will not rust. The improved thimbles are stamped out to the form of the rope, and allow of it retaining its natural strength. The patent wire-rope stroppings for blocks are stronger, lighter, and cheaper than hempen.

I shall be much gratified if their lordships will be pleased to allow a deposit in their lordships' Model-room in Somerset House, of the accompanying specimens of my patent wire-rope stroppings, for blocks of from 5 to 15 inches (such as I am about to supply for the use of her Majesty's ship *Penelope*, pursuant to their lordships' demand to fit that ship), and which are numbered from 5 to 15; also a block, two sheaves, and 2 thimbles of my improved construction, together with fitted specimens of my patent wire-rope.

I have the honour to be, Sir, your humble servant, ANDREW SMITH.

DIALLING.

SIR,—Your astute correspondent with the hard name, pronounced, I believe, "Cow-harry-tig," and dating from Merthyr, is, I believe, no other than the redoubtable underground surveyor, who at present exhibits himself to the miners of Dean Forest—not as the discoverer even of a mare's nest, but as the baffled searcher for the bottom of a shallow bore-hole, about 90 ft. deep, put down, under his own inspection, by some of his own *canny* north countrymen. When "Cow-harry-tig" shall have taken into consideration, that the bore-hole in question is not more than 100 ft. deep, passing through soft sandstone, and, finally, through the vein of coal about 4 ft. thick, in which vein of coal, headings, 6 ft. wide, are cut, in search of the lost aperture—whilst during the boring there was no extra friction upon the rods, nor were there any of the other indications, which always accompany a considerable degree of lateral deflection in a bore-hole passing through solid rock—he must admit, that he alone can lay claim to the merit of discovering a mare's nest, when he makes the suggestion contained in his pithy communication, as to the deviation of bore-holes from the perpendicular direction.

"Cow-harry-tig" cannot deny, that any ordinary dialler could have ascertained that point to which the bore-hole would have descended if it had been perpendicular; and this done, he would have set off his heading, so as to meet this point with the centre of that heading—so that, with a 6-ft. heading, he would have had 3 ft. of width upon each side of the point where the bore-hole should have met the floor under the coal; and in this case, even if the actual direction of the bore had been deflected 3 ft. (a most liberal allowance), its cavity would still have been found within that portion of the coal removed in carrying forward the drift. But what will your correspondent answer to the fact, that many yards of heading have been cut from this ascertained point in search of the bore? Does he mean to tell your readers, that the bore-hole has deflected 29 yards in passing downwards about 30 yards? This upstart, *eminent* surveyor is already deservedly the laughing-stock of the neighbourhood, for his reiterated blunders, and a thorough drilling may, perhaps, drive him to his *Ready Reckoner*, and to the *Diallers' Guide*, for that information, which may enable him to take a correct sight. The foresters say, that he mixes his grog so strong, that he sees double, and in consequence takes *double sights*.

Dialling having failed to solve this knotty problem, recourse was had to an expedient, which, as it is novel and ingenious, may, in its details, interest your mining readers. An iron weight, such as balances a common sash window, was provided, with a long cord attached, and, armed with this curious piece of mechanical contrivance, the *eminent*, accompanied by a body of scientific assistants, repaired to the bore-hole. The eminent betook himself to the drift below, under the bore-hole, and his assistants prepared from above to sound the bore with their plummet, in order that the eminent below might, when it struck the bottom, *hear* whereabouts the drift should be directed. The scene now becomes impressive and imposing. Above are seen the scientific assistants, surrounding the bore-hole; one of them stands erect, grasping the plummet and line, like a Jack Tar in the main chains, or a harpooner about to strike a whale. Below, in the dark and narrow heading, leans the eminent; *auribus arrectis*, sweating at every pore with breathless anxiety, and rendering the damp, unwholesome gases of the mine doubly unsavoury, as did Sancho in days of yore, when, beset with fear, he stood the perils of La Manchia's knight. Suddenly the scientific assistant lets go the plummet, and a splash is heard, as when a frog leaps into a puddle, the line runs out, and the plummet sinks quietly into the soft mud, which fills some yards in depth of the bore-hole. Like Echo, the eminent below hears nothing but himself. The experiment is repeated, but no sound indicates the direction of the bore, and the eminent departs, declaring, as he goes, "that the very devil is in it."

In taking leave of "Cow-harry-tig," I affirm, that a more palpable exhibition of gross and unprincipled ignorance and negligence never before disgraced any mining district in the United Kingdom; and were these *exposés* a little more frequent, we should, perhaps, be less pestered with northern adventurers seeking their fortunes in the south, and who, because they speak with the true Northumbrian burr, must needs be skilful coal miners. There are many plain, hard working colliers in the Forest of Dean who never used a dial, yet could put this eminent to shame, by finding, within a few feet, the bottom of this bore-hole.—ROBERT MUSHET: *Coleford, May* 22.

BRETT AND LITTLE'S ELECTRO-TELEGRAPHIC CONVERSER.

SIR,—With reference to the inquiry of one of your correspondents, last week, as to the public adoption of our telegraph, we are happy in being able to state that, in addition to the Whitehaven Junction Railway, where we are now fixing our telegraph, which you then noticed, our instruments have been in operation at Birkenhead, on the Chester and Birkenhead Railway, for nearly six weeks, with perfect success, where their use in one instance prevented a collision taking place in the tunnel, besides being found of great advantage during the Chester Races. Should your correspondent be in that neighbourhood, he can see its working, and make his own inquiries; or, if more convenient for him to look in at our offices, he will need no other introduction than his own card. BRETT & LITTLE.

Furnival's Inn, May 27.

THE LATE EXPLOSION OF THE CELLULAR CYLINDER OVEN AT MR. DAKIN'S ESTABLISHMENT.

SIR,—From the interest you have manifested as regards this inquiry—judging alone from your Number of last week—I do not hesitate to address you, with the full confidence that the observations I may offer will find space in your columns, whether in accordance with, or opposed to, the opinions you may entertain. One of the causes to which the accident is attributed, is the defective nature of the casting; while others consider that the wet state of the brick-work was the real cause, and which will, I have no doubt, be entered upon in your report of the evidence adduced. With your permission, I should be glad, as a practical man, and one watching the evidence with much interest, and expecting to acquire information from the several scientific gentlemen examined, to offer a few brief observations on the manner in which the cylinder was cast, which will be better illustrated by the accompanying sketch:—

a—representing the interior of the cylinder.
b—the exterior or outer surface.
c c—the cast-iron, or section, of the cylinder.
d—the cell, or water tube, cast in the cylinder, of which there were 47 in number.
e—the head, or feeder, which was stated in evidence to have been cast to a length of 6 to 8 inches—the latter being about one-third of the thickness of the cylinder.

Now, Sir, I think it must be apparent to most practical men, that this cannot be considered in any light as a head cast on the cylinder, from its being only one-third the thickness of the casting, and that being on the outer side; so that, in fact, the iron would only rise, as shown in the dotted lines, *f*, leaving the scoria, or impurities of the iron, in that portion of the cylinder forming the angle, marked *g*, and thus cause the casting to be defective, as was, I believe, generally admitted—assuming that honeycombed appearance which the fracture presented.

I have always been led to consider, that for castings of these descriptions, where extreme pressures are to be applied, and where life and property are so intimately concerned, that such cylinders should be cast with a head of two feet at least, and certainly not less than one-third more iron than that actually required to fill the mould should be run over the head, or form a runner, in order to bring all the scoria, or surge, possible into the "head of the casting," which head is subsequently cut off, when cold, to the required length, by suitable machinery, and not broken off by hammers, as appears to have been the case with the cylinder in question; and which, I hesitate not to say, is a very dangerous process—more particularly as applied to a cylinder required to withstand a pressure of 3300 lbs. on the square inch, with a temperature of 600° to 700° Fahr. According to recent experiments that have been made, relative to the strength of this material, it appears that 300° Fahr. is the maximum temperature at which the iron may be considered as at the strongest point, the ratio of strength being as follows:—At 300 the strength will be equal to 6; at 400°=5; at 500°=4; at 600°=3; at 700°=2; at 800°=1; or, in other words, suppose a given bar of iron, capable of sustaining 6 tons, at a temperature of 300° Fahr., it would, on this hypothesis, sustain only a weight of 1 ton, at a temperature of 800°. I beg to hand you a table, for which I am indebted to Mr. Healy, and which will, doubtless, interest your readers, and lead to further communications on a subject of so much interest—the information so conveyed being the result of experiments made with apparatus of a similar nature to that of Messrs. Brown and Co.'s, and adverted to in the course of the inquiry; from which will be seen the number of atmospheres, or great amount of pressure, to which the metal is subjected, to acquire the given heat.

Blackwall, May 27. AN ENQUIRER.

The following is the table referred to by our correspondent:—

Deg. of Fahr.	No. of atmos.	Press. in lbs. p. sq. inch.	Deg. of Fahr.	No. of atmos.	Press. in lbs. p. sq. inch.	Remarks.
212	1	15	420	20	300	
251	2	30	430	22	330	
275	3	45	457	30	450	.. Steel, pale straw colour.
294	4	60	473	35	525	.. Steel, full yellow.
308	5	75	500	45	675	.. Ditto, brown.
320	6	90	520	55	825	
332	7	105	540	65	975	.. Ditto, purple.
342	8	120	557	75	1125	.. Bright blue.
351	9	135	565	80	1200	.. Full blue.
359	10	150	572	85	1275	
367	11	165	579	90	1350	
374	12	180	586	95	1425	
381	13	195	605	110	1650	.. Dark blue, verging on black.
387	14	210	616	120	1800	.. Lead melts.
394	15	225	636	140	2100	.. Mercury boils.
399	16	240	700	220	3300	.. Tin melts.
404	17	255	748	300	4500	.. Iron, red in the dark.

TELEGRAPHIC IMPROVEMENTS.—Among the list of designs for articles of utility, registered during the past week, we perceive the "Telekouphenon," or Pneumatic Telegraph, by Mr. Francis Wishaw, C.E.

THE "GREAT BRITAIN" STEAM-SHIP.—This noble ship, after its many vicissitudes, is advertised for sale. She is now lying in the Coburg Dock, Liverpool—her great strength having enabled her to withstand the shocks of the heaviest seas, whilst stranded on rocks, throughout a whole winter, in a most exposed situation, without, it is said, in the slightest degree, altering her lines. The damage done to the engines and ship's bottom has been carefully estimated, after surveys by competent engineers and shipbuilders, and for a moderate sum the whole ship might be restored to her original condition. With the engines she has hitherto been worked, she would make an admirable transport ship, capable of carrying from 800 to 1000 men a fortnight's voyage. With a smaller pair of engines, capable of driving her at a slightly reduced speed, by which her coal stowage would be reduced one-half, she would accommodate over 1000 emigrants for a distant voyage, or 1500 free labourers from the coast of Africa to the West India colonies.

GLASS WATER PIPES.—At a recent meeting of the Plymouth Town Council it was determined to lay down glass water pipes in that town. It was stated that the average duration of cast-iron pipes is about 10 years; glass is not liable to corrode nor abrade under such circumstances. Hence, it is inferred, that the durability and cleanliness of glass, will more than counterbalance the difference of original cost.

IMPROVEMENTS IN TWO AND FOUR-WHEEL CARRIAGES.—We have written much on the present inconsistent working of the Patent Laws—their injustice to the inventor and man of genius, and their injurious effect on enterprise and scientific advancement; but we sometimes are made aware of the fact, that there are some would-be-clever beings in the world, with more money than wit; who would take out a patent, for the mere sake of so doing, without reference to the nature of the invention, or whether their patent is tenable or not; to such individuals it is of little consequence whether the abuses of the patent offices exist or not. We are led to these remarks, by observing a patent granted to Reuben Dyer, of Boston, Lincolnshire, for what he terms "improvements" in two and four-wheel carriages; and in what will our readers believe this great improvement to consist? Why, in fixing the mud-guard which is generally placed over and in front of the wheels, and fixed to the body or frame of the carriage, *to the axle or shaft*. Now, this man has probably spent from 150*l.* to 200*l.* for this *patent!* which it is clear he could not maintain, if he, with a host of witnesses, saw his next door neighbour constructing a two, or a four-wheel carriage, with the mud-guard fastened *to the axle or shaft*. Truly some people have singular ideas of the patent laws and their value.

RAILWAY MATERIALS FROM FRANCE.—There has been a further arrival of railway materials from France. A vessel named the *Peggy* has arrived in the river from Boulogne, having on board 57 waggons, 114 pairs of wheels, 3 breaks, 37 pedestals, 206 pieces of timber and other articles, being materials formerly sent to France for use in the construction of one of the main lines of railway, and now returned. It will be observed, that the present arrival of railway materials has taken place from Boulogne; the former one, recently mentioned, having been from Rouen.

EXTENSION OF THE BROAD-GAUGE TO BIRMINGHAM.—The Railway Commissioners have presented to Parliament their report on Lord Redesdale's motion for an inquiry into the merits of the different lines running to the north. We have not seen the report, but we understand it admits the superior speed of the broad-gauge engines, and recommends that the broad gauge should be carried up to Birmingham, on the assumption that a break of gauge at Oxford, or Fenny Compton, would be very unfair to the public; and that, in fact, as the broad gauge will shortly be completed between London and Wolverhampton, the commissioners feel bound, on public grounds, to recommend its continuation from Oxford to Birmingham. We are informed, but we must be permitted to doubt the accuracy of the information, that the commissioners do not admit that the broad gauge has any mercantile superiority over the narrow gauge in the conveyance of heavy trains upon certain gradients, or that it is more economical. We have always understood it to be an acknowledged fact, that one of the essential advantages of the broad gauge is its daily practice of running heavy first and second-class express trains, at speeds which the narrow-gauge locomotive has never yet approached; and we have always looked forward to the extension of the broad gauge to Birmingham as a public advantage, inasmuch as second-class passengers, as well as first, will then enjoy the benefit of transit by express trains to and from Birmingham—a benefit which the London and North-Western cannot, from the inferior power and speed of their narrow-gauge locomotives, confer upon railway passengers. We believe, from our own personal observations, that the recently-constructed broad-gauge engines will take a 200-ton train as fast as, if not faster, than any narrow-gauge engine can take a 100-ton train up or down the average gradients of the railways of this country, and that they will do so at a much less comparative consumption of coke, and wear and tear of machinery. We also hear that the document in question eulogises the report of the gauge commissioners. We are almost inclined to be sceptical on this point, when we reflect upon the strange conclusions at which the gauge commissioners arrived, and the variance existing between those conclusions and numerous facts then evident, and which facts further experience has rendered notorious.—*Herald.*

Geology of the Isthmus of Panama,*

ACCOMPANIED BY A MAP OF THE TERRITORY FROM THE GULF OF DARIEN TO CHIRIQUI.

BY E. HOPKINS, C.E., F.G.S.*

[*Continued from the Mining Journal, April 8.—Communicated by the Author.*]

It is generally considered, in Europe, that the great chain of mountains, forming the western Andes of South America, continues unbroken through the Isthmus of Panama to the rocky mountains of North America; however, by a minute examination of this narrow strip of land, we find that such a continuity does not exist. The Choco branch of the Cordilleras (bordering the Pacific Ocean) as it approaches the Darien, is intersected by numerous ravines; and, although, none have been found to offer much encouragement for making a water communication across, yet, by means of these gaps, the natives are able to walk over in a comparatively short time. From the Darien to San Blas and Bayano, the chain is wide, and from 3000 to 5000 ft. high; and, geologically speaking, the South American Andes *terminates in the Isthmus of the Darien.*

The connexion of the two Americas is effected by means of a transversal neck of dry land (*i. e.*, situated nearly at right angles to the great chain), composed of dissimilar rocks, running parallel, and differing in character to those of the adjoining Cordillera. The Isthmus of San Blas deserves much more attention than it has hitherto had:—on the north coast, it has a fine harbour, sheltered by several islands, with sufficient depth of water for all navigable purposes. In a straight line from this place south, at a distance of 5½ leagues, but across a high ridge, is the beautiful river Bayano, and this river has sufficient water, during full tide, for vessels drawing from 9 to 12 feet.† There are, it is true, shallows at the mouth (in front of the Island of Chepillo, in the Pacific) caused by the accumulation of sand, mud, &c., brought down by floods and repelled by tides, but there is a good depth within the Delta, even at low water, and a fine muddy bottom; and I have the authority of Capt. Kellett, of H. B. M. ship, *Herald*, who is, at present, engaged in surveying the coast in the Pacific, to state, that there is water enough at the mouth, at full tide, for vessels of the above draught. The banks of this fine river, which I surveyed from the mouth to the Indian possessions, are the most fertile of the whole territory of the Isthmus of Panama; the soil contains a good proportion of lime from the decomposition of marine shells, also well mixed with sand, and decomposed vegetable matter, which is rarely the case in other parts of the Isthmus. To the west of San Blas, the great chain becomes broken, and divided into numerous ramifications, and is finally intersected by the River Chagres. A line drawn from the mouth of the River Chagres to Panama would pass over the lowest depression of the isthmus, as described in the first report. Gorgona, which is situated in the centre of the above line, is not more than 50 ft. above the level of the sea; and the ridge between Gorgona and Panama does not exceed 150 ft. high; and this is the most eligible direction for making an ordinary communication between the two seas, suitable to the present wants of the commerce of the Pacific. (See former report.) Southwest of the River Chagres, towards Chorrera and Capira, are numerous ridges and isolated conical mountains, forming a kind of amphitheatre to the sources and marshes of the River Trinidad; and within this marshy basin are a great number of conical peaks, of various heights. The Capira ridge unites with the mountains of Chame, and the latter, again, unite with the chain running west from the confluence of the River Trinidad.

At the junction of these ridges, near Penonome, the chain forms a large mass of high elevation, and continues to run unbroken along the northern part of the isthmus through the province of Veraguas, where it receives two lateral branches from the south. On arriving at the lakes of Nicaragua, the chain subsides, and expands, and ultimately it dwindles into a broken, irregular ridge, somewhat flat, forming several groups of detached masses of distinct geological rocks, until it terminates in the flat and broad Isthmus of Tehuantepec, where, in reality, the great chain of North America takes its rise.

THE GEOLOGICAL CHARACTER OF THE ISTHMUS.

There are four great lines of disturbances intersecting the isthmus north and south, which may be called meridional splits. One passes through the Island of Taboga, extending along the east side of the Peak of Cabra, and the Valley of the Rio Grande to Chagres. The disruptive force appears to have been very intense in the Island of Taboga, and the latter looks like a portion of the margin of a great volcanic crater. It is formed of sedimentary clay-slate, cleaved north and south, and broken and lifted on the southern side—the part dipping towards the bay is strewed over with large quantities of loose blocks, and large irregular masses of melted rocks; and the great fractures, as well as the cleavage divisional planes, have been partly burnt and filled by melted matter: the centre of the bay appears to have been the focus of eruption. At the foot of the Cabra, the sedimentary rocks are upheaved, but no trace of igneous effects is visible beyond Taboga.

The *second* line runs through Penonome, and has formed a ridge of low elevation, and a series of parallel splits. There are no appearances of melted rocks in this line of disturbance, but there are abundant indications of a very strong crystallising action, particularly in the hornblendic and quartz rocks; and these have caused great contortions in the structure of the northern part of the chain. To the west of the above, near Calobre, are numerous thermal and silicious springs, also chalybeate and saline waters, where invalids occasionally resort.

The *third* disturbing line has formed the mountains of Punto Mala, and the transversal ridge of Santiago, abutting against the northern chain. This, like the former, shows no traces of burnt rocks; it appears to be the production of the ordinary aqueous chemical action. This ridge contains a few metalliferous channels and veins of quartz; also, flakes of native copper, enclosed in the lamina of a purple slate. The latter is sparingly charged with copper in solution, and the metal is constantly deposited in these rocks, in the manner explained on a former occasion.

The *fourth* and last, within the limits of the accompanying map, is that which forms the ridge of La Palma, running from the Bay Honda to the El Mineral de Veraguas, and extending from thence to the northern coast. This cross ridge contains numerous veins of quartz and silicious springs, in the neighbourhood of which are quantities of silicified trees.

The northern coast is steep, abrupt, and rocky, and deeply grooved along the foot of the chain. The southern declivity tapers gradually into extensive plains towards the shores of the Pacific. Numerous isolated beds of shells, in their natural state, are seen resting on the low lands, several feet above high-water mark, particularly at Portobello, Bayano, and Panama, showing very clearly that a great portion of the low lands of the isthmus have been risen within a comparatively recent period. The fossil shells, enclosed in the compact argillaceous beds of Veraguas, are very different to those found in their natural state on the surface; they have not been sufficiently examined as yet to determine to what class they belong. There are also several beds of fossil trees in the same situation; but these are all of the same species as those now growing on the isthmus. Large beds of fossil trees are found resting on the flanks of the third cross ridge; and it is interesting to note, that here, like in numerous other places in America, we find that the change in the organic substances depend entirely on the nature of the springs, and the matter in which they are enclosed, and not to the character of the decayed substances. It does not follow that trees should be converted into coal by being entombed in sedimentary sand and clay beds. If the mass should be charged with silicious matter, the trees become silicified; if calcareous, so the nature of the fossil trees; and it is only when bituminous springs are present, that wood is transformed into coal—indeed, coal seams, *without the admixture of decayed vegetable matter*, are common in America. The black carbonaceous fossils, and the thin seams of bituminous clay found in this locality, the bituminous shales of Chiriqui, and those of the Isla del Muerto, have caused many persons to believe that there must be a coal formation in the isthmus. Such carbonaceous seams are frequently found even in the primary series of rocks, and, therefore, do not necessarily indicate the existence of workable coal; such beds are often strongly impregnated with sulphur, and are very different to the economical coal formation, and easily known by the experienced eye, independently of the geological position.

The general character of the crystalline rocks of the isthmus will be easily understood, on glancing over my geological map. It commences on the east with the auriferous porphyries and granites of the Andes to San Blas. From the latter to the sources of the Boqueron, Pequeni, and the Chagres, is a group of parallel masses of granites, porphyries, and red argillaceous rocks, *all running north and south*, irrespective of the direction of the chain—in this case at right angles to it, in accordance with the general direction of the whole of the South American laminated rocks. (See Hopkins on the *Meridional Cleavage of Rocks.*) From the meridian of the Boqueron to that of Portobello, are numerous channels of schistose rocks of all colours—from a very bright red to a dark brown colour; light green to the ordinary dark velvet green of the hornblende variety; white, and passing through different shades of grey and blue to a deep dark colour, according to the changes and proportions of the component ingredients. The cleavage of the above series is well developed; and the structure uniformly running north and south, excepting slight contortions produced by the irregular pressure of lateral masses of mountains, and the planes of the cleavage, or lamina, retain their usual character of vertically leaning a little to the east or west, and preserving the same law of structure and meridional uniformity as that observed throughout the whole western hemisphere. From the above to the meridian of Chorrera, and the port of Chagres, the formation is a ferruginous hornblende, enclosing a few channels of fine grain porphyries and subordinate masses of rocks of similar character, alternating between porphyry, greenstone, basalt, &c., according to the changes in the relative proportions of iron, hornblende, and felspar. The ferruginous rocks are all more or less auriferous; the gold washings of Pequeni, and those of San Rita, are situated on the exposed and weather-worn flanks of these red channels.

Westward to the River Cocle, and the meridian of Penonome, the fundamental base changes from a dark ferruginous hornblende to red and grey porphyries, and thence to porphyritic granite, and compact argillaceous masses, enclosing veins of quartz, felspar, basalt, &c., in which are situated the gold mines of Cocle. These are situated near the second line of disturbance described above. From Cocle to the El Mineral de Veraguas the whole of the chain consists of auriferous porphyries and granites undergoing very rapid decomposition, the compound contains but little mica, and comparatively small proportions of silica; hence these crystalline rocks are very susceptible of disintegration, and crumble away, from the effects of the heat of the sun and the heavy rains. There are no crystalline rocks fit to be quarried, and rendered serviceable for building, in the isthmus. The cross-ridges, or southern buttresses are similar in character to the northern chain—the celebrated gold washings of Veraguas are situated on the northern declivity of the latter, and the gold washings of San Barbara, Sona, and Palmas, are on the former.

In my former report, I noticed the absence of lime in the composition of the rocks of the isthmus, as far as then examined; the same want prevails westward from Panama to Veraguas. I have not been able to detect a single vein of carbonate of lime in the primary rocks, nor in the sedimentary. Silica, alumina, magnesia, and iron, appear to be the ordinary component elements; the silica is but sparingly disseminated; the alumina and iron predominate; hence the poverty of the soil, when left in its natural state, to any production beyond common grass for grazing cattle.

[*To be continued in next week's Mining Journal.*]

* Surveyed for, and reported to, the New Granadian Government, in 1847-8.

† See separate report on the above river, &c.

On the Winning and Working of Collieries.

BY MATTHIAS DUNN, MINING ENGINEER.

No. V.—*Continued from the Mining Journal of the 13th inst.*

The BLACK-BAND of Scotland also deserves to be specially noticed, being from 15 to 20 in. thick, and differing little in appearance from the black and brown shales contiguous to the coal. For many years it escaped observation, as containing iron; and, although its riches were discovered, and occasioned the erection of the iron-works in the neighbourhood of Airdrie, it was for a considerable period understood to be the only bed of that description in the district; but since the rage for iron-making became so intense, search has been made over many parts of the country, and that search has been rewarded by the discovery of various beds in Fifeshire and the Lothians. Ayrshire, and the neighbourhood of Kilwinning and Kilmarnock, has presented the most abundant supply; for there the black-band has been found to lie in seams from 3 to 5 ft. thick, and extensive tracts are already leased, upon which are founded extensive works.

A great advantage attaches to this black-band ironstone by its ready calcination, which takes place in large heaps, intermixed with waste coal, and the produce exhibiting scoria of 60 per cent. of iron, which scoria is also much more easily fluxed than the raw ironstone of other districts.

Iron-works have of late years been established upon the coal and ironstone in the very lowest series of the Newcastle coal-field, at Redesdale and Hareshaw Common, in Northumberland, where numerous irregular beds of ironstone are found, possessing excellent quality, but the space which intervenes between them, the thinness of the only coal seam, and the distance from market of the manufactured article, must necessarily place them under unfavourable circumstances, for competing with the works of Staffordshire and Scotland. The same range of ironstone has occasioned the erection of extensive furnaces in the western part of the county of Durham, near Wolsingham, but the supply of coal is drawn from the abundant coal-fields to the north of the River Wear, above Auckland, where the cheapness and quality of coal for coking and iron-making counter-balance the distant and expensive carriage to the several markets.

Fossils, in great varieties, are found in the bands, as also in the roof, stone, and floors of coal mines. The Fossil Flora of Hutton contains innumerable specimens, which exhibit in a striking manner the extraordinary changes that have taken place in this terrestrial globe; since a great number of these specimens, both of animals and plants, are similar to those which belong to tropical climates.—The *Cinder Coal*, effected by the whin strata as before mentioned. A remarkable deterioration of coal, under this denomination, was discovered at the new winning of North Biddick, county of Durham, in 1842; for, although the other parts of the estate had afforded an extensive colliery, and the locality of this pit had been mined round upon all sides without any remarkable deterioration of the coal, yet where the shaft was sunk, and for several hundred yards, the coal was found to continue in a culmy state, having the appearance of being partly coked, but also of an ashy nature, as if it had been gathered from the ashes of a furnace. It did not burn, but its appearance was different from that of anthracite, or even of coal, by means of whin influence. After having explored the mine for several hundred yards, and having expended upwards of 20,000*l.*, the colliery was abandoned as worthless. *Bands.*—It is a common occurrence for a seam of coal in one locality to be perfect; whilst as it progresses to a little distance it becomes subdivided by bands of shale or sandstone, which, from being scarcely perceptible, gradually thicken till they render the seam unworkable. The Heworth band, in the neighbourhood of Newcastle, is a striking example. At its commencement near the River Tyne it is scarcely perceptible, but at a short distance to the south it increases to the thickness of many fathoms; indeed, it is this ever varying formation of the coal strata, and the designation of the seams appended to them by each locality, which render it so difficult to trace and identify one coal-field with another, although continuous.

Washes, or Gravel Beds, are frequently discovered many fathoms below the surface of the earth, bearing the appearance of having once constituted the beds of lakes or rivulets, one of which is generally found contiguous. The most remarkable instance that I know of is in the county of Durham. It is very well ascertained to exist at Newton, contiguous to the River Wear, and is traceable through the colliery at Harbour-house, where, at the depth of 24 fms. from the surface, and 16 fms. beneath the bed of the Wear, it completely intersects the Hutton seam. It consists of gravelly sand saturated with water, so that wherever met with it runs most fluently. From Harbour-house it extends towards Chester-le-street; but, as no coal is worked in that direction, its position is not ascertained, except indicated by sand at the surface, but no doubt is entertained of its identity. It is well-known in the Birtley Vale, where it interferes with the main coal seam at the depth of about 30 fms. from the surface; and there is reason to believe that its course has been beneath the Ravensworth Vale, and under the town of Newcastle, till its appearance is very clearly ascertained in the contiguous colliery of St. Lawrence, which was made the subject of a paper read by me to the Natural History Society of Newcastle, and from which the following remarks are extracted:—"In the year 1831 the colliery was reopened, and in pursuing the old workings at the depth of 28 fms. from the surface, it was discovered that they had been stopped by the intervention of a gravel or sand bed. As the extent was unknown, it was drifted into and bored from the surface, so as to show that it was of considerable extent, and within the sphere of its influence, that all the coal was displaced." The gravel consisted of rounded specimens of basalt, spar, &c., proving most unequivocally that they had been rolled from a distance, and that this formation had at one time formed the bed of a rivulet or lake on the surface of the earth, whereas now it is 15 fms. below the bed of the River Tyne. It is certain that there is no similar effect produced upon any of the lower seams in any part of the line traced; but similar gravel beds, of minor importance, have been met with in the neighbouring colliery of Jesmond. The *edge seams* of Mid Lothian constitute so very remarkable a group of coal beds, that I read a paper on the subject to the Natural History Society of Newcastle, from which I will give a few extracts:

They are seen to crop out along the shore of the Frith of Forth, in the neighbourhood of Portobello, the streak or water level course bearing south 20° west, with north-west rise and south-east dip. Originally coal levels extended from this quarter into the country, and won successively to the level of the sea the estates of Duddingstone, Brunstrane, Niddrie, Edmondstone, Drum Gilmerton, Somerside, Sheriff Hall, &c., forming at that period the chief supply for the city of Edinburgh; but the upper levels having been extensively worked, the expense of winning and working the lower coals, and the opening out of flat coal-fields by means of public railways, have well nigh abolished the working of the edge coals, notwithstanding the excellence of their quality, and their close vicinity to so fine a place of sale.

The extreme east of these seams, at the outcrop at Edmondstone, are nearly perpendicular, the lower seams gradually radiating till the north green or lowest seam is worked at an augle of 30°.

Towards the Valley of the Esk, in the collieries of Edmonstone and Sheriff Hall, we observe a succession of seams lying nearly flat; and there does not seem ever to have been any elucidation of the fact, as to whether these flat seams were identical with the edge seams, or that they existed independently of them; but, from the great distance between the seams, the collieries in the valley have, of course, never proved the great mass of those coals, although there is no doubt of their existence. The out-cropping of the edge seams, according to the undulation of the surface, occupies a space, from south-east to north-west, of 1000 or 1500 yards.

Underneath the north green seam, at the depth of about 40 fms., ranges a bed of encrinal, or carboniferous, limestone, about 30 ft. in thickness, and which is extensively worked in the Gilmerton estate, by pillar and stall, at the depth of 30 fms. from the surface. It lies at an angle parallel with the north green seam. The winning at Gilmerton, in 1829, to the north green seam, was the deepest which ever was sunk upon, the edge coals being 96 fms. to a stone drift, which cut the coal at 80 yards. The neat thickness of the coal was from 5 to 6 ft., and lying at an angle of about 40° with the horizon. For many years after I knew the colliery, the coals were conveyed out of the workings by *bearer women*, who, with creels on their backs, a strap round the forehead, and a short stick, would carry, up and down the declivities of the mine, loads of from 200 to 230 lbs. weight—the floor of the coal being cut into steps, wherein to fix their devious footings. It was in these seams that the *bearing* system of Scotland originated, which was so highly deprecated by Mr. Bald, and which was, until very lately, so great a disgrace to the country; for every collier must needs wed a lass who had been brought up to the business, and few others would marry a collier. Towards the latter days of Gilmerton Colliery, in 1836, tramways were introduced, which, by cutting diagonally down the seam, enabled horses and putters greatly to supplant the bearing system.

As a proof of the importance which attaches to custom in mining matters, I may mention that the flat collieries in the valley, at one period, were all wrought by bearer women. The necessary stock of Edmonstone, for raising 30,000 tons per annum, always exceeded 130; and, notwithstanding the obvious comparison between so rude a system and that of railways, yet many years elapsed before the owners of these collieries were converted to the policy of substituting railways; and at the period of Lord Ashley's commissioners visiting the mining districts of Scotland, they found great numbers of poor women consuming their existence in this degrading employment. In many collieries the coals were borne up the shafts by means of circular stairs, upon the backs of these poor women; but, thanks to Lord Ashley's exertions, there is scarcely a trace left of these demoralising customs.

IMPROVEMENTS IN SMELTING COPPER AND OTHER ORES.

MR. BIRKMYRE'S PATENT—*Concluded from last Journal.*

Now, in relation to the working of this invention, about 10 cwts. of the iron pyrites, in pieces of the size of a walnut, are to be shovelled into one of the kilns (previously lighted, and nearly charged with iron pyrites); and at the end of six hours a similar charge may be put into the other kiln (also previously kindled), and so on alternately with each kiln. Thereafter, withdraw about 8 cwts. of mundic ash for every charge of 10 cwts. mundic, containing 40 per cent. sulphur—as, for every 32 of sulphur that it loses, it gains only 12 of oxygen; but the sulphurets of copper, and of the other metals herein specified, lose very little weight; on the contrary, when the ores are good, and the process well conducted, they gain fully as much in oxygen as they lose in sulphur. I generally find that good copper pyrites gains 4 per cent. in weight. The charge of copper ore for each tray may be about 1½ cwt., and should be evenly spread, so as to form a layer of between 1 in. and 2 in. thick. The ore should be turned over now and then by a rake, in order to expose it equally. After it has been roasted for about an hour, it may then be thrown into the lead cistern, and lixiviated with hot water. The solution should immediately be run off into leaden pans, heated and acidulated with sulphuric acid, so as to prevent the formation of a sub-salt when precipitating the copper of the sulphate of copper by iron or zinc. In these leaden pans the copper may be obtained pure from the ore on the second day, as it is very quickly precipitated at a boiling heat; for I find that a square foot of iron, weighing 6 lbs., precipitates 2 lbs. 5 ozs. of copper in an hour, which is at least 50 times faster than if it were left to be precipitated undisturbed in the cold, but much of this time may be saved even in the cold, with the further advantage of obtaining the copper in mass or electrotypes, such as sheets or rolls (technically copper shells), by dissolving the iron or zinc (according to the electro-metallurgic process) in sulphuric acid in a separate vessel, and connecting either of these metals by a wire to the object to be copied, in the solution of copper. It generally takes two roastings to extract by lixiviation all the copper. For the second roasting I prefer to mix with the lixiviated ore iron pyrites or fresh copper ore, and then to treat as before-mentioned. The resulting solution of sulphates of iron and zinc (a by product) I have used with great advantage in purifying green soda leys, previous to crystallising the washing soda of the shops. The quantity of this solution which should be used is 1 imperial gallon at 40° Twaddell's hydrometer, to 33 imperial gallons impure soda leys at 50°; after boiling the mixture to 54°, and allowing it to settle, it should then be drawn off into cast-iron pans to crystallise. The small addition of the metallic solution, besides separating the sulphur of the sulphuret of sodium, as sulphuret of iron and zinc affords, by the double decomposition, the proper quantity of sulphate of soda (carbonate of soda crystallizing best when a small quantity of sulphate of soda is present) to dispose the carbonate of soda to form large and fine crystals.

The process of calcining, which has been described, may be varied by placing 1½ cwt. of the fresh ore on the tray, and then adding a hot solution, containing 9 lbs. saltpetre, or 8 lbs. cubic nitre (the solution possessing the advantage over the dry salts, of dispensing with steam from a steam-boiler for the vitriol chamber), or 18 lbs. of saltpetre may be used, provided the quantity of any of the said ores is only one-half the weight of the iron pyrites. The ore may also be mixed from the first with 16 per cent. of saltpetre and 10 per cent. of vitriol, specific gravity 1750, or 14 per cent. of cubic nitre, with the same quantity of vitriol, or these salts with the vitriol may be used after the ores have been oxidated by calcination. The deutoxide of nitrogen thus developed is advantageously used for converting the sulphurous acid of the burning iron pyrites into sulphuric acid, and the remainder of the sulphur and arsenic of the said ores into a sulphate and arseniate. When the action has ceased, the sulphate and arseniate of potash or soda are dissolved out of the calcined ore, and saved; the washed ore now freed, in a great measure, of its sulphur may be treated with a small quantity of sulphuric acid, to dissolve any oxide of silver or copper. The silver of the sulphates may be separated at once from the copper and other metals by metallic copper, or it may be precipitated as a chloride by muriatic acid (hydrochloric acid), or common salt, and pure silver obtained by fusing the chloride with an alkaline carbonate. The argentiferous ores of lead and antimony, and the impure peroxide of tin, should, after being thus purified, be reduced with carbonaceous matter in the ordinary reducing furnace.

Having thus described the nature of my invention, and the best means I am acquainted with for performing the same, I would have it understood, that I do not confine myself to the precise details herein described, provided the peculiar character of my invention be retained; but what I CLAIM is—1. The roasting, or calcining, separately, the ores of copper, and the ores of the metals herein specified, by placing these ores in an open vessel in a mundic kiln—so that the vapours from its contents shall escape freely with the vapours of combustion of the iron pyrites, and be condensed at the same time in the vitriol chambers.—2. I claim the so engaging, simultaneously from an open vessel in a mundic kiln, the deutoxide of nitrogen for the vitriol chamber, with that of oxidating the said ores, by mixing with the said ores saltpetre or cubic nitre.—3. I claim the supplying the vitriol chamber with steam, by using a solution of saltpetre, or of cubic nitre, with the said ores.—4. I claim the action of sulphuric acid upon the said ores, after they have been treated with saltpetre or cubic nitre, and either before or after they have been freed from the sulphate or arseniate of potash or soda.—WILLIAM BIRKMYRE.

Proceedings of Public Companies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY ... Birmingham, Wolverhampton, and Dudley Railway—Dee's Hotel, Birmingham, at half-past Two.

TUESDAY ... Galvanised Iron Company—London Tavern, at One.
Herne Bay Pier Company—King's Head Tavern, Poultry, at Two.
Craig Ddu Slate Company—offices, at One.
Hungerford Market Company—offices, at half-past Twelve.

WEDNESDAY ... St. Austell Consols Mining Company—New Inn, Tywardreath, at Five.
Whitehaven and Furness Railway—offices, at One.
Amiens and Boulogne Railway—London Tavern, at One.
Belgian Eastern Junction Railway—London Tavern, at One.
Provident Clerks' Mutual Benevolent Association—London Tav., Twelve.
Pembrokeshire Iron and Coal Company—Gresham Rooms, at One.
New Zealand Company—offices, at One.
Rock Life Assurance Company—offices, at Twelve.

THURSDAY ... Hammersmith Bridge Company—British Hotel, Cockspur-street, at One.
Surrey Iron Railway—Spread Eagle Inn, Wandsworth, at Eleven.
Derbyshire, Staffordshire, & Worcestershire Junc. R'way—offices, Twelve.

FRIDAY ... New Granada Mining Company—offices, at Two.
Law Life Assurance Company—offices, at Twelve.
Derby, Uttoxeter, and Stafford Railway—George & Vulture Tav., Twelve.

[*The meetings of Mining Companies are inserted among the Mining Intelligence.*]

NATIONAL BANK OF IRELAND.

The annual meeting of proprietors was held on Wednesday, the 24th inst., at the office of the establishment, Old Broad-street—LAMIE MURRAY, Esq., in the chair—at which a bonus of 10,000*l.*, to be distributed rateably among the proprietors on the payment of the next half-yearly dividend, was declared. According to the statement presented by the directors, the progress of the bank is satisfactory, and its profits have exceeded those made in former years. The following in an extract from the report:—The bad debts having been written off, the directors have, out of the net profits of the year, amounting to 33,496*l.* 9s. 1d., paid the two half-yearly dividends, and there remains a surplus of 10,996*l.* 9s. 1d. At the last meeting, the proprietors having concurred with the directors in the opinion that a reserve fund of 50,000*l.* was sufficient, the directors have come to the conclusion of declaring a bonus of 10,000*l.*, to be divided rateably amongst the proprietors, and which will be paid them with the next half-yearly dividend. During the latter part of the year, it having been intimated to the directors that the London and Dublin Bank were desirous of dissolving that company, negotiations were entered into with the directors, which terminated in this establishment succeeding to its connections in the towns of Dundalk, Carrickmacross, Wicklow, Kells, Athy, Mullingar, and Parsonstown, with every prospect of advantage to the bank. The whole of these localities are, with the exception of Parsonstown, within the circle from which all banks of issue, except the Bank of Ireland, had been excluded, until the extinction of the monopoly by the Banking Act of 1845.

The undivided profits at December, 1846, were		£50108 15 3
Net profits for the year ending December, 1847	33496 9 1	
Deduct half-year's dividend to Midsummer, 1847	11250 0 0	
Ditto ditto to Christmas, 1847	11250 0 0	22500 0 0
Leaving amount of undivided profits at December, 1847		£60105 4 4

COLONISATION OF NOVA SCOTIA.

A meeting of the committee of Scotch baronets, appointed for the establishment of their Nova Scotia rights, was held at the British Hotel, Jermyn-street, on Tuesday last, the 23d inst.—Sir W. A. MAXWELL, of Calderwood, in the chair.—A copy of a petition was submitted to the committee, which had been presented to the House of Commons by the Earl of Lincoln, calling the attention of Parliament to the policy of making the Halifax and Quebec Railway a Government line, and as such, a source of wealth, patronage, and security to the mother country; and their attention was called to the fact, that the American Congress had recently received an elaborate report on the subject of a railway to the Pacific ocean, showing that such a project is no wild visionary scheme, but that the child is now born who will see the railways of eastern America terminate at the Pacific; and that the distance from London to Canton, which now occupies from four to six months, *vid* the Cape of Good Hope, will be reduced *vid* Canada to about a month. A printed compilation was laid on the table, containing observations, geographical and statistical, on the province of Nova Scotia, as originally bounded, containing upwards of 20,000,000 acres of vacant land; a historical summary of events relative to the baronetage, a roll of existing members, with a list of charters, and counsel's opinions. Since the formation of this committee, the names of some of the baronets have appeared, enlarging the subscription towards the railway, from 5000*l.* to 180,000*l.* A series of resolutions were passed—a deputation nominated to wait on Earl Grey, to explain the policy recommended; and Sir Richard Broun, Bart., in submitting them to the meeting, observed that, during the last few years, the country had been saddled by railway mania, with an expenditure in 1845, of 58,000,000*l.*; in 1846, 120,000,000*l.*; and in 1847, 26,000,000*l.*; that during the same period, free trade development had subjected to ruin 100,000,000*l.* of British colonial property; that the potato failure had cost 33,452,775*l.* for foreign corn, and 8,000,000*l.* for Irish relief purposes, in 15 months; while 1,000,000 persons had perished, and 130,000 poverty-stricken creatures had fled to other shores. After this harrowing picture, he called upon them to use their utmost exertions in securing the rights of Nova Scotia, and encouraging emigration. In New Brunswick alone, Providence had bountifully spread a table in the wilderness, sufficient for the support of all our surplus population for generations to come. He called upon them to hasten the day, when England and Scotland should be regenerated by finding a new home in British America, and told them to go forward in that career as men who had a paramount social duty to perform—one that must be performed, and against which no gainsaying would be allowed to prevail.

RESISTANCE TO RAILWAY TRAINS.

Under the head of "Institution of Civil Engineers," in last week's Journal, we gave a report of the discussion on Mr. Gooch's paper on the above subject, on the 16th inst., the paper having been read on the 18th April. In consequence of Mr. Locke having, on the occasion, expressed himself thoroughly convinced that Mr. Brunel and Mr. Gooch were wrong in the belief entertained by them, that they could get a uniform speed of 50 to 60 miles per hour, by gravity alone, down the Wootton Bassett Incline, which is one in one hundred, some carefully conducted experiments were made there on Friday and Saturday, last week. It has been generally assumed that a train, travelling at a rate of 36 miles per hour down such an incline, was the maximum uniform speed; and that there was then a resistance, exclusive of the friction of the working parts of the engine, of 22 lbs. or 23 lbs. per ton. The experiments made by Mr. Gooch, and which were conducted under the eye of Capt. Simmons, the Government inspector, would seem to establish facts contrary to this assumption. They were made by the indicator carriage, constructed by Mr. Gooch, and four passenger carriages, weighing together 50 tons. The incline is on an embankment, running into a wide valley, much exposed to the wind; and a strong side breeze blew during the experiments, which proved that a speed of 52·3 miles was obtained per hour, and could usually be obtained, even in such unfavourable weather. How far the conclusions arrived at by these experiments—that the resistance of the atmosphere, on broad-gauge carriages, is not more than 14 lbs. per ton—we shall not pretend to inquire; certain is it, that this low resistance differs very materially from every calculation previously made, and that too by sound practical men, such as Stephenson, Locke, Bidder, Scott Russell, Wyndham Harding, and a host of others, who have all been convinced that the resistance is equal to 22 lbs. or 23 lbs. per ton, and against whose opinions we have only that of Mr. Gooch, in support of his theory. These continual experiments on the Great Western Railway, almost daily puffed off in the *Morning Herald*, should be received with caution, as evidently done with a motive; and that motive is to endeavour to lead the public into the belief, that high velocities are not more expensive to railway companies than moderate ones—anddes contrary to all preconceived notions, and well-established mechanical fact; and also, that the broad-gauge railway is alone capable of securing those high velocities with safety to the public. The numerous accidents which have taken place on this expensive line, in proportion to those on the narrow-gauge lines, renders that same public rather chary of unlimited belief in the one-sided statements of interested parties.

SUPPLY OF WATER FROM THE NEW RED SANDSTONE.

An interesting paper, "On the supply of the town of Liverpool with Water, from shafts sunk in the New Red Sandstone," was read at the Polytechnic Institution, Colquitt-street, on Monday last. After some general observations, as to the importance of a plentiful supply of pure water, he remarked that the original source of all water found in the earth is the rain which falls from the clouds; though the fall of rain at Liverpool was only about 36 inches per annum, in the interior and hilly parts of the country it was far greater: for instance, in 1845, there fell at Seathwaite 151 inches; Grasmere, 121; Buttermere, 87; Keswick, 62; Whitehaven, 49; Cockermouth, 47; and at Manchester, the fall averages about 41 inches. He had examined various springs in the new red sandstone, and had never found any above the mean temperature of the climate; and concluded, therefore, that those in the new red sandstone were entirely supplied from the rain which falls from the clouds, estimated in that district at 36 inches per annum. Allowing 18 inches for evaporation and vegetation, would leave 18 inches absorbed and stored in the earth every year, giving 392,040 gallons per acre, or 250,905,600 gallons per square mile. He maintained that the strata of the new red sandstone, at a level below the surface of the sea, are naturally fully and thoroughly permanently saturated with water; and that any shaft or excavation sunk to that depth, will always, through lateral percolation, be full of water to that height. He considered the most desirable mode would be to sink shafts from 1000 to 2000 feet deep, which would pierce a stratum highly saturated with water, and which would be filled to within a short distance of the surface. He objected to the plan proposed by some persons to be adopted, that of bringing surface water from a distance, as all such was impregnated with millions of myriads of animalculæ, to the great detriment of public health. In conclusion, he stated as his decided conviction, that the strata of the new red sandstone formation are not yet exhausted of their water, neither do they show any symptoms of exhaustion, neither is it possible to exhaust them, so long as they maintain their present constitution and geological position; so long as they consist of innumerable beds, of variable hardness, and of variable porosity; so long as they are capable of lateral percolation; so long as the hydrostatic pressure of the sea enables them to keep their lower beds at the full point of saturation; so long as their upper beds exogressibly absorbant of water; and so long as Nature, in her bountiful beneficence, is annually pouring down upon them more than 500,000,000 gallons of water upon every square mile of their surface.

NEW PATENTS.

A. Solomons, London, merchant, and R. Astley, Rotherhithe, Surrey, printer, for improvements in the manufacture of gas, tar, charcoal, and certain acids.

T. Hague, Waterhead Mills, Lancashire, machine maker, and J. Frith, Huddersfield, Yorkshire, cotton doubler, for certain improvements in machinery for twisting and doubling cotton yarns and other fibrous materials.

R. [illegible], gent., for improvements in propelling vessels. (Being a communication.)

[illegible] Foley, gent., Clarendon-place, Notting-hill, for certain improvements in obtaining [illegible] from copper ores.

[illegible]ington, Warkworth, Northumberland, civil engineer, for improvements in locomotive engines, and in marine and stationary engines.

[illegible] F. Louis, gent., Southwark, Surrey, for an improved method or process of preserving certain animal products.

T. Richardson, Newcastle-upon-Tyne, chemist, for improvements in the manufacture of manure.—*Mechanics' Magazine.*

STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY 45
BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th; and from Suez on or about the 10th of every month.

For rates of passage-money, plans of the steamers, and to secure passages, apply at the company's offices, No. 122, Leadenhall-street, London.

TO FAMILIES ABOUT TO VISIT ITALY.—STEAM DIRECT FROM SOUTHAMPTON TO GENOA, LEGHORN, AND CIVITA VECCHIA.—The next DEPARTURE for the above ports will be the Peninsular and Oriental Company's steam-ship *PACHA*, Capt. JOHN OLIVE, on MONDAY, May 29, at 2 P.M. This vessel has been fitted expressly for first-class passengers and their servants. Horses and carriages taken on deck. Private cabins can be secured by early application.—Rates of passage and plans of the vessel may be obtained at the company's offices, 122, Leadenhall-street, London. 46

CALEDONIAN RAILWAY COMPANY—LOANS ON DEBENTURES.—TENDERS OF LOANS ON DEBENTURE BONDS are now RECEIVED in sums of not less than £500, for any number of years not exceeding five. Interest to be at the rate of 5 per cent. per annum, payable half-yearly, in London, Edinburgh, Glasgow, or in any country bank. 47

Tenders to be addressed to this office, giving full name and address of lender.—Parties may also communicate with Messrs. Foster and Braithwaite, 68, Old Broad-street, London.
By order, D. RANKINE, Treasurer.
Caledonian Railway Office, Edinburgh, Feb. 25, 1848.

IMPORTANT TO RAILWAY AND STEAM NAVIGATION COMPANIES, MANUFACTURERS, AND ENGINEERS. 48
W. BROTHERTON AND CO.'S
PATENT LUBRICATING FLUID (or Animal Oil) FOR ALL DESCRIPTIONS OF MACHINERY.

W. B. & CO. have the pleasure to state, that the above article is extensively used in her Majesty's Steam Navy; and by several of the principal Steam Navigation and Railway Companies, and is pronounced by them, and by the first practical engineers of the day, to be far better adapted for the purposes of lubrication than any other article hitherto used for such purposes. The Patent Lubricating Fluid is equally applicable for the most intricate and finest pieces of machinery, as for the heaviest bearings of the steam-engine. It is cheaper, much more economical, and cleaner than oils at present in use; is free from smell, and calculated to effect a vast saving in the expenditure of working steam powers.

Further particulars can be had, and testimonials seen, by application to the manufacturers, W. BROTHERTON & CO., Hungerford Wharf, Strand, London.

N.B.—The above article will burn in lamps, and give a light equal to the best sperm oil.

BRITISH AND FOREIGN PATENT NAIL COMPANY. 49
(*Provisionally Registered 7 and 8 Vic., c. 110.*)

Established for the MANUFACTURE of every DESCRIPTION of NAILS necessary for house-building, shipbuilding, and coach-building, together with PINS, SPIKES, BOLTS, &c.—The object of this company is to carry out inventions in machinery, which has been fully tested, and found capable of producing NAILS of a quality equal to the best hammered nails, which can be sold by the company at a less price than the common cut nail. Specimens of the nails, and an estimate upon the working of the company's machinery—showing a dividend of 40 per cent. to the shareholders—may be examined at the offices of the company.

The shares of the company are £5 each, subject to the Parliamentary deposit of 6*d.* per share.—The calls will not, at any time, exceed 10s., and no call, after the first, will be made without two months' previous notice.

Applications for shares will, for a limited time, be received by the secretary, until the DEED of SETTLEMENT, which now LIES at the office FOR SIGNATURE, is filled up.
By order of the directors, T. PEPPER, Secretary.
Offices, 28, Surrey-street, Strand, London.

PATENT ALKALI COMPANY'S IRON PAINT.—This PAINT, now first offered to the public, is the PRODUCT of a PATENT PROCESS, and possesses VALUABLE and PECULIAR QUALITIES, not otherwise attainable. Its colour is a purple-brown—it is perfectly innocuous—is far more durable than lead paint, and two coats are fully equal to three of any other paint. A single coat will be sufficient to demonstrate this. It dries rapidly, and its durability is very great. 50

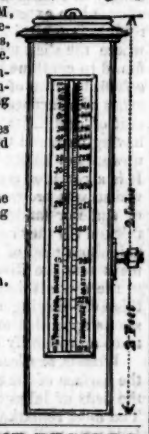
From its chemical composition, it is especially, and above all other paints, adapted to covering iron; also wood, and stuccoed, or brick walls. The peculiar oxidation of the base of this paint makes it impossible that further change should take place in its composition. Its identity with iron secures it from galvanic action, so injurious to the durability of lead paints on iron work. It has been exposed on shipping to the action of seawater, and the sulphuretted hydrogen, so prevalent in sea-ports and tidal harbours, for three years, without change.

Its *cheapness* and *strength* render it admirably adapted for iron railings, farm buildings, and shipping. It will also cover creosoted timber. Price, by the ton, £20, delivered in London. All orders to be addressed to the offices of the company, 20, Fenchurch-street, London; where testimonials may be seen as to the value of the paint.
EVANS, BROTHERS, Agents.

TO ENGINEERS AND BOILER-MAKERS.
LAP-WELDED IRON TUBES, FOR MARINE AND LOCOMOTIVE STEAM-BOILERS, 51
TUBES FOR STEAM, GAS, AND OTHER PURPOSES,
ALL SORTS OF GAS FITTINGS.
THE BIRMINGHAM PATENT IRON TUBE COMPANY,
42, CAMBRIDGE-STREET, BIRMINGHAM, & SMETHWICK, STAFFORDSHIRE,
MANUFACTURE BOILER and GAS TUBES, under an exclusive License from Mr. R. Prosser, the patentee. These tubes are very extensively used in the boilers of marine and locomotive steam-engines in England and on the Continent—are stronger, lighter, cheaper, and more durable than brass or copper tubes, and are warranted not to open in the weld.
42, CAMBRIDGE-STREET, CRESCENT, BIRMINGHAM.
WORKS—SMETHWICK, STAFFORDSHIRE.
LONDON WAREHOUSE—No. 68, UPPER THAMES-STREET.

LAP-WELDED IRON TUBES. 52
W. H. RICHARDSON, Jun., and CO.,
MANUFACTURE every description of WROUGHT-IRON TUBES, for Locomotive and Marine Boilers, Gas, Steam, and other purposes.
PATENT TUBE WORKS,
DARLASTON, STAFFORDSHIRE.

THE EXPLOSION AT MANCHESTER.
HENRY BAKER begs to call the attention of ENGINEERS and PROPRIETORS of STEAM-ENGINES, to his 53
NEWLY-IMPROVED STEAM-GAUGE,



which shows the PRESSURE and TEMPERATURE of the STEAM, as seen in the drawing annexed. It is an ornament to the engine-room, and supersedes the ordinary mercurial gauge in these respects, by not being so cumbersome, much cheaper, and warranted accurate.

It has been tested at the Polytechnic Institution, London, with satisfactory results; and, since the boiler explosion of the *Cricket* steam-boat, this gauge has been adopted on board the steam-boats plying on the River Thames.

Boiler explosions, in many instances, occur through steam-gauges not being in good working order; therefore, every attention should be paid to these very necessary adjuncts.

HENRY BAKER'S STEAM-GAUGES
may be FIXED in a COUNTING-HOUSE, and will SHOW the PRESSURE the same as if fixed in an engine-room—thereby having a check on the person working the engine.
Price ..... £2 2s.

VACUUM-GAUGES,
In brass frames, showing the barometric scale, from 22 in. to 30 in.
Price ..... £3 3s.
In mahogany, very elegant, showing the barometric scale in full.
Price ..... £3 3s.

HENRY BAKER,
BAROMETER, THERMOMETER, AND PHILOSOPHICAL INSTRUMENT MANUFACTURER,
No. 90, HATTON-GARDEN, LONDON.

RAILWAY AND OTHER IMPORTANT RECORDS, EFFECTUALLY PROTECTED FROM DAMP AND VERMIN.
Extract from the Appendix to the Second Report of the Commissioners on the Fine Arts.

"In 1839, I superintended the construction of a house, of three stories, on the Lac d'Enghein. The foundation of the building is constantly in water, about 19½ inches below the level of the ground floor. The entire horizontal surface of the external and internal walls was covered at the level of the internal ground floor with a layer of
SEYSSEL ASPHALTE,* 54
less than half an inch thick, over which coarse sand was spread. Since the above date, no trace of damp has shown itself round the walls of the lower story, which are, for the most part, painted in oil, of a grey stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 2½ inches above the external surface of the soil, and only 19½, at the utmost, above that of the sheet of water. The layer of asphalte having been broken and removed, for the purpose of inserting the sills of two doors, spots, indicating the presence of damp, have been since remarked at the base of the door-posts.

The DIRECTORS of the SEYSSEL ASPHALTE COMPANY have much pleasure in recommending to the notice of ENGINEERS and ARCHITECTS the application of the ASPHALTE of SEYSSEL, as the *only effectual* mode of preventing damp in basement floors, and water from percolating through the ARCHES of a VIADUCT.

The arrangements of this company enable works of any extent to be executed with the greatest promptitude. I. FARRELL, Secretary.
SEYSSEL ASPHALTE DEPOT, STANGATE, LONDON.
ESTABLISHED 1838.
* This method has been adopted at the New Houses of Parliament.

GIDDINESS IN THE HEAD, BILE, AND APOPLEXY, CURED BY HOLLOWAY'S PILLS.—A young man of the name of Dustin, a mariner, of St. Michael's Mount, near Penzance, was for years occasionally attacked with a giddiness in his head while at sea, which rendered his situation one of imminent peril; the malady increased so much that he was compelled to leave his occupation; he then commenced taking Holloway's pills, which, in a comparatively short time, restored him to health, and enabled him to resume his former employment. For bile, sick headaches, overflowing of blood in the head, or symptoms of apoplexy, this admirable medicine should be taken, which is a certain cure. Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London. 55

PATENT IMPROVEMENTS IN CHRONOMETERS, WATCHES, AND CLOCKS.—E. J. DENT, 82, Strand, and 33, Cockspur-street, watch and clock maker, BY APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1836, 1840, 1842. Silver lever watches, jewelled in four holes, 6 gs. each; in gold cases, from £8 to £10 extra. Gold horizontal ws ches, with gold dials, from 8 gs. to 12 gs. each. 56
DENT'S PATENT DIPLIEDOSCOPE, or meridian instrument, is now ready for delivery. Pamphlets containing a description and directions for its use 1s. each, but to customers gratis.

PROFESSIONAL LIFE ASSURANCE COMPANY, Connecting the Clerical, Legal, Military, Naval, and Medical professions, and holding out advantages to the public not hitherto offered by any similar institution. 57
Incorporated.—Capital £250,000.
Established upon the mixed, mutual, and proprietary principle.

Rates essentially moderate.—Every description of policy granted. Immediate, survivorship, and deferred annuities; and endowments to widows, children, and others.—Every policy (except only in cases of personation), indisputable.—The assured permitted to go to and reside in Canada, Nova Scotia, New Brunswick, Australasia, Madeira, Cape of Good Hope, and Prince Edward's Island, without additional premium.—Medical men remunerated for their reports.—Loans granted on real or personal security.—One-tenth of the entire profits appropriated for the relief of the assured while living, and of his widow and orphans.—Annuities granted in the event of blindness, insanity, paralysis, accidents, and any other bodily or mental affliction, disabling the parties.—Persons of every class and degree admitted to all the advantages of the corporation.—Rates for assuring £100 at the age of 25, 35, 45, and 55, respectively—namely, £1 14s. 6d., £2 5s. 6d., £3 4s. 3d., and £4 18s. 6d.

Prospectuses, with full details, may be had at the office.—Applications requested from parties desirous of becoming agents. EDWARD BAYLIS, Actuary and Secretary.
Offices, 76, Cheapside, London.

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			1838	192 3 0	87 1 4	13 10 2	395 11 1
			1839	165 11 10	74 1 9	11 3 1	346 2 3
			1840	116 7 6	54 0 10	7 18 10	296 13 4
			1841	111 6 8	49 10 0	7 10 4	247 4 5

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